

REGIONE MOLISE**PROVINCIA DI
CAMPOBASSO****COMUNE DI
MONACILIONI****COMUNE DI
RIPABOTTONI****COMUNE DI
S. ELIA a PIANISI**

Denominazione Impianto:

RS3 MONAC

Ubicazione:

Comuni di Monacilioni - Sant'Elia a Pianisi - Ripabottoni (CB)

Particelle: varie

PROGETTO DEFINITIVO

Per la realizzazione di un parco eolico composto da n. 5 aerogeneratori di potenza complessiva pari a 31 MW per la produzione di energia elettrica, ubicato alle località "Serra del Parco" - "Lama" - "Folcaro Cerro Secco" rispettivamente dei comuni di Sant'Elia a Pianisi - Monacilioni e Ripabottoni e delle relative opere connesse e delle infrastrutture indispensabili ubicate anche nel comune di Morrone del Sannio (CB).

PROPONENTE

**RINNOVABILI SUD TRE S.r.l.**

Via della Chimica n. 103

85100 Potenza (PZ)

PEC: rinnovabilisudtre@pec.it

ELABORATO :
RELAZIONE SHADOW FLICKER

N. Documento

MONAC_26REL

Aggiornamenti	Numero	Data	Motivo	Eseguito	Verificato	Approvato
	Rev. 0	Settembre 2023	Istanza V.I.A. art. 23 D. Lgs. 152/2006 e Istanza Autorizzazione Unica art. 12 D. Lgs. 387/2003		Damiani Luca F.	Spagnuolo Nicola

Spazio Riservato agli Enti

PROGETTAZIONE GENERALE

S.T.P. Damiani & Partners S.r.l.
 Vico Mores n. 8
 71036 Lucera (FG)
 mail: info@damianiandpartners.com
 pec: stp.damiani@pec.it

damiani & partners Società tra professionisti srl
 Vico Mores, 8 / 71036 Lucera (FG)
 Cod. Fisc./P.IVA 03 949 660 710

PROGETTAZIONE SPECIALISTICA

STUDIO DI INGEGNERIA Ing. Michele R.G. CURTOTTI
 Viale Il Giugno n. 385
 71016 San Severo (FG)
 Ordine degli Ingegneri di Foggia n. 1704
 mail: ing.curtotti@alice.it
 pec: ing.curtotti@pec.it
 Cell: 339/8220246

SC Studio di Ingegneria
 Michele R.G. Curtotti



RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

INDICE

1.1. DESCRIZIONE GENERALE DELL'INTERVENTO	pag. 2
1.2. IL FENOMENO DELLO SHADOW FLICKER	pag. 5
1.2.1. FENOMENI DI GLINT, FLICKER, E SHADOW.....	pag. 7
1.2.1.1. Fenomeno del Glint.....	pag. 8
1.2.1.2. Fenomeno del Flicker	pag. 9
1.2.1.3. Fenomeno dello Shadow	pag. 10
1.2.2. FISICA DEL FENOMENO DELLO SHADOW FLICKER.....	pag. 14
1.3. LIMITI DI ESPOSIZIONE ALLO SHADOW FLICKER NELLA NORMATIVA INTERNAZIONALE E NELLA LETTERATURA DI SETTORE	pag. 16
1.4. MODELLO DI TURBINA EOLICA	pag. 31
1.5. INDAGINE E LOCALIZZAZIONE DEI <i>POTENZIALI</i> RICETTORI SENSIBILI	pag. 32
1.6. SHADOW FLICKER ANALYSIS	pag. 33
1.7. STIMA DEGLI IMPATTI	pag. 35
1.7.1. FASE DI COSTRUZIONE/ESERCIZIO.....	pag. 35
1.8. SHADOW FLICKER E SALUTE PUBBLICA: IL FENOMENO DELL'EPILESSIA FOTOSENSIBILE (PSE)	pag. 36
1.9. FONTI BIBLIOGRAFICHE.....	pag. 43

PROPONENTE: RINNOVABILISUD TRE		
--------------------------------	--	--

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

ALLEGATI

Allegato n. 1: Mappa / elenco ricettori censiti al N.C.E.U.

Allegato n. 2: Tabulazioni risultati di Calcolo WindPro

Allegato n. 3: Shadow Map

	SC Studio di Ingegneria Michele R.G. Curtotti	PROGETTISTA: Ing. Michele R.G. Curtotti Viale II Giugno, 385 71016 San Severo (FG) - ITALY
--	--	---

1.1. DESCRIZIONE GENERALE DELL'INTERVENTO

La presente proposta progettuale è finalizzata alla realizzazione dell'impianto per la produzione di energia elettrica da fonte eolica denominato "RS3 MONAC" (di seguito: impianto di progetto), che la società RinnovabiliSud Tre srl intende realizzare nei comuni di Sant'Elia a Pianisi - Monacilioni e Ripabottoni (CB), alle località 'Serra del Parco', 'Lama' e 'Folcaro Cerro Secco', con relative opere connesse e infrastrutture indispensabili ubicate anche nel comune di Morrone del Sannio (CB), costituito da 5 aerogeneratori di potenza nominale di 6,2 MW, per una potenza complessiva installata di 31 MW".

L'impianto di progetto in scala ampia è posizionato come indicato nella seguente ortofoto (vedi **Figura 1.2.-1.**).

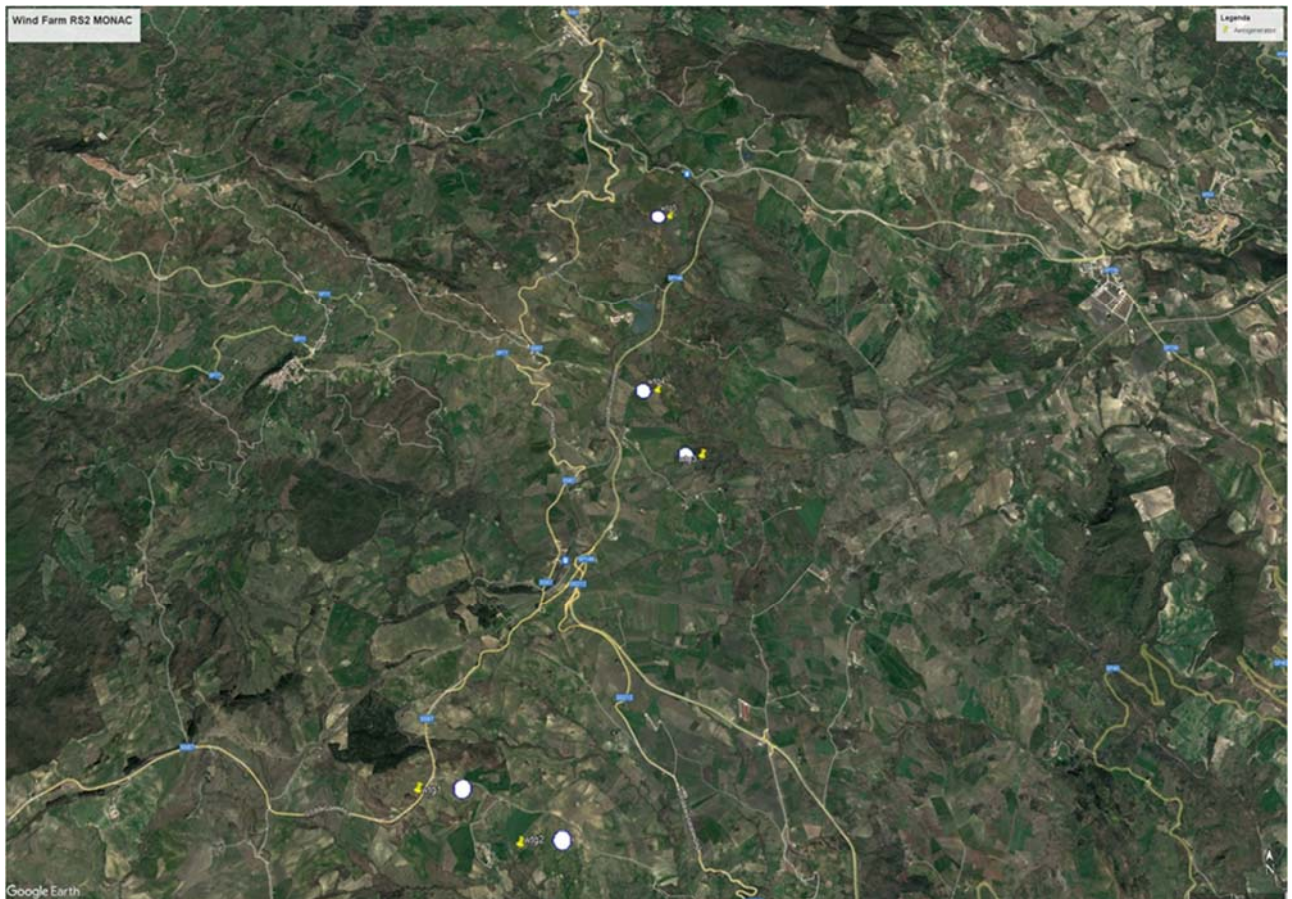


Figura 1.2.-1.: Layout di impianto (inquadramento ristretto) (Fonte: Google Earth).

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

Lo “STUDIO DELL’EVOLUZIONE DELL’OMBRA (SHADOW FLICKER)” del progetto definitivo si è reso necessario “ove la progettazione implichi la soluzione di questioni specialistiche” secondo quanto esplicitato all’art. 28 del D.P.R. 207/2010.

L’impianto di progetto prevede la realizzazione di **n° 5 (cinque)** aerogeneratori (WTG) tripala ad asse orizzontale di grande taglia, ciascuno di potenza elettrica nominale pari a 6,2 MW, per una potenza elettrica complessiva pari a 31 MW, e delle relative opere civili ed elettriche accessorie per la connessione elettrica alla RTN per i quali sarà impiegato il modello di turbina eolica del tipo **V162 da 6,2 MW** della **VESTAS**, ritenuta fra le macchine più performanti ad oggi disponibili sul mercato stando le caratteristiche anemometriche proprie del sito e le esigenze di impianto.

La scelta definitiva della turbina da installare sarà operata a valle della autorizzazione unica, ovvero alla cantierabilità del parco, tra i modelli di turbine a quel dato momento presenti sul mercato, nel rispetto delle caratteristiche dimensionali massime, dei livelli di emissione sonora e di potenza nominale dei modelli previsti in progetto.

Il modello di turbina eolica impiegato è costituito da una torre di sostegno tubolare metallica a tronco di cono sulla cui sommità è installata la navicella, il cui asse è a **125 m** dal piano campagna (Hub height), con annesso il rotore di diametro pari a **162 m (Rotor diameter)** (lunghezza pala 81,0 m), per un’altezza massima complessiva del sistema torre-pala (**Hub height+1/2 Rotor diameter**) di **206 m s.l.t.**.

Si riportano di seguito (vedi **Tabella 1.2.-1.**) le coordinate geografiche delle n° 5 (cinque) WTG del layout di progetto espresse nel sistema di riferimento UTM WGS84 - Fuso 33:

Tabella 1.2.-1.: Coordinate delle n° 5 (cinque) WTG (ID.:A1,A2,A3,A4,A5) del layout di progetto.

Comune MONACILIONI		Provincia Campobasso	
Località Lama			
Coordinate UTM/WGS84	Est		Nord
Fuso33			
A1	486125.2334	4611005.2191	
Comune SANT’ELIA A PIANISI		Provincia Campobasso	
Località Serra del Parco			
Coordinate UTM/WGS84	Est		Nord
Fuso33			
A2	487052.3758	4610565.5146	
Comune RIPABOTTONI		Provincia Campobasso	
Località Folcaro-Cerro Secco			
Coordinate UTM/WGS84	Est		Nord
Fuso33			
A3	488322.4668	4614275.9174	
A4	487882.4849	4614971.9356	
A5	488089.4757	4617061.0286	

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

A servizio degli aerogeneratori saranno realizzate le seguenti

1) OPERE EDILI:

- Realizzazione di viabilità di accesso all'area, di accesso ai punti macchina, delle piazzole di cantiere e definitive;
- Posa dei cavidotti di impianto;
- Fondazioni per gli aerogeneratori;
- Sistemazione dell'area Stazione di Utente a 36 kV (cs: edificio di raccolta, edificio quadri e controllo, trasformatore 36/30 kV, recinzione e opere edili accessorie);
- Fondazioni per componenti elettromeccaniche nella stessa;
- Ripristini nell'area a fine cantiere.

Per lo stesso scopo saranno realizzate le seguenti **OPERE ELETTRICHE:**

2) OPERE DI UTENZA:

- Realizzazione di una Stazione di Utente a 36 kV (SE: edificio di raccolta, edificio quadri e controllo, trasformatore 36/30 kV, recinzione e opere edili accessorie) di connessione e consegna 36/380 kV;
- Posa in opera di cavi interrati MT a 30 kV per il trasporto dell'energia elettrica prodotta dagli aerogeneratori d'impianto fino alla SE;
- Posa in opera di cavi interrati a 36 kV per il trasporto dell'energia elettrica dalla SE alla Stazione RTN 380/36 kV;

3) OPERE DI RETE:

- Posa in opera di cavi a 36 kV per il trasporto dell'energia elettrica dalla Stazione Utente (CS) allo stallo dedicato (cella a 36 kV) in stazione RTN di TERNA a 380/36 kV.

4) SISTEMA DI ACCUMULO della potenza nominale di 7 Mw (BESS).

Si rimanda agli elaborati grafici di riferimento per la visualizzazione del tracciato di posa in opera dei cavidotti interrati e la posizione geografica delle sopra citate stazioni elettriche.

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

1.2. IL FENOMENO DELLO SHADOW FLICKER

Le turbine eoliche, come tutte le strutture elevate, in condizioni soleggiate proiettano delle ombre³ sulle aree circostanti la loro ubicazione che variano di lunghezza, secondo l'altitudine del Sole, e la posizione, secondo l'azimuth del Sole stesso (Bearing).

Nel momento in cui le pale di una turbina eolica ruotano in condizioni assolate, mentre il rotore è in movimento, esse possono intercettare la luce solare in maniera diretta, proiettando delle ombre mobili sulle aree adiacenti e causando un effetto di lampeggiamento tremulo (o sfarfallio), con conseguenti cambiamenti alternati d'intensità luminosa. Questo fenomeno è chiamato "Shadow Flicker", ovvero l'ombreggiatura intermittente del Sole da parte delle pale della turbina.

Se la durata dello Shadow Flicker è eccessiva, questo effetto di sfarfallio può arrecare un disturbo visivo, legato alla percezione dell'intermittenza luce/ombra, alle abitazioni situate nelle immediate vicinanze delle aree in cui le ombre vengono proiettate, e i suoi effetti devono essere considerati nella progettazione di un parco eolico.

Lo Shadow Flicker (trad.: "intermittenza dell'ombra") è un'ostruzione periodica della luce ed è il termine usato per descrivere cosa accade quando le pale rotanti di una turbina si presentano fra un osservatore e il Sole, causando un'ombra intermittente (*vedi Figura 1.3.-1.*).

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 5</p>
---------------------------------------	--	---------------

¹ Fonti:

1. Danish Wind Industry Association (link: www.windpower.org);
2. American Wind Energy Association (link: www.awea.org);
3. Report for Scituate, MA: Shadow Flicker Analysis C.E. McClelland, M. Knipe – Wind Energy Center University of Massachusetts, Department of Mechanical & Industrial Engineering (link: www.umass.edu/windenergy);
4. Report Tawl368 Baydon Meadow Shadow Flicker assesment Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng – The Energy Workshop Ltd (12.05.2006).

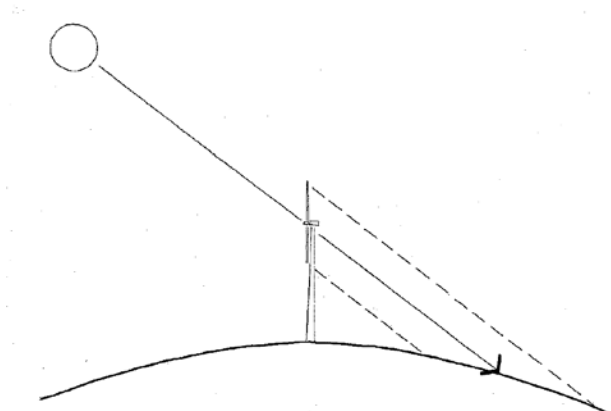


Figura 1.3.-1.: Lo Shadow Flicker si verifica quando le pale rotanti di una turbina si presentano fra un osservatore e il Sole, causando un'ombra intermittente.

Il fenomeno si verifica quando una combinazione particolare di circostanze viene a coincidere in posizioni specifiche e in tempi particolari di un giorno e di un anno. Un esempio di Shadow Flicker con cui molta gente ha familiarità, è ciò che accade mentre si guida oltrepassando delle file di alberi spaziate regolarmente durante il tramonto, con il Sole basso dietro gli alberi⁴.

Con particolare riferimento alle turbine eoliche, lo sfarfallio avviene quando il Sole è basso nel cielo e illumina la struttura venendosi a trovandosi dietro il rotore della turbina; ciò può indurre la proiezione dell'ombra delle pale su una struttura in un fenomeno d'intermittenza, sembrando così di passare rapidamente dall'ombreggiamento alle condizioni naturali di illuminazione mentre la turbina gira.

Quando un'ombra intermittente che passa rapidamente è osservata da un'apertura stretta (una finestra, un lucernaio, ecc.), questa è conosciuta come Flickering. Per esempio, un soggetto all'interno di una struttura può percepire l'intermittenza dell'ombra come una riduzione momentanea dell'intensità della luce naturale, e se i cambiamenti nei normali livelli d'intensità della luce sono alti, il Flicker può causare un fastidio percettivo.

La distanza fra una turbina eolica e un ricevitore potenziale dello Shadow Flicker riguarda l'intensità delle ombre proiettate dalle pale e quindi l'intensità di sfarfallio. Le ombre proiettate nelle vicinanze da una turbina eolica saranno più intense, distinte e "focalizzate"; ciò avviene perché una maggiore porzione del disco solare è ostruita in maniera intermittente. Similmente, il Flicker è più intenso se generato dall'area della pala più vicina alla base e più lontana dalla punta. L'intensità dell'ombra proiettata diminuisce con l'incremento della distanza di separazione tra fonte e ricevente in maniera non lineare, ed anche la risposta umana ai livelli di luce è non lineare. Per esempio, durante l'eclissi solare, o al tramonto, prima che accada un

² Per esempio, guidare a 20 mph oltrepassando delle file di alberi spaziate regolarmente ad una distanza di 15 piedi, produce il fenomeno di Flicker a 2 Hertz.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

cambiamento del livello di luce percettibile all'occhio umano, deve essere ostruita una grande proporzione del disco solare: questo fenomeno riduce ulteriormente la percezione dello Shadow Flicker.

Le moderne turbine eoliche sono tipicamente delle macchine tripala che ruotano a rapporti compresi tra i 12 e i 24 giri al minuto (RPM); se, per esempio, la luce solare attraversa il rotore di una turbina eolica tripala che gira a 20 giri/min., la luce tremolerà ad un rapporto di $3 \times 20 = 60$ ombre al minuto, cioè 1 al secondo, o 1 Hertz (Hz).

Studi scientifici condotti nel Regno Unito⁵ hanno dimostrato che le frequenze che producono disturbo alla percezione umana sono quelle superiori ai 2,5 Hz. Questo è vero sia per la maggior parte della popolazione che per il suo 2% che soffre di epilessia; il 5% della popolazione ha invece esibito una reazione avversa agli effetti della luce intermittente per frequenze superiori ai 2,5-3,0 Hz. Ciò è ben sopra l'effetto massimo di frequenza dalle turbine, che è solitamente di sotto 1 Hz, ed è ben al di sotto quella considerata come la causa di fastidio; **tali basse frequenze sono dunque inoffensive in termini di sanità e sicurezza**⁶.

1.2.1.	FENOMENI DI GLINT, FLICKER, E SHADOW
---------------	---

Nella valutazione dell'effetto visivo di problematiche quali il luccichio (o Glint), il Flicker, e l'ombra generata dalle turbine eoliche (Shadow), è necessario comprendere le dinamiche del movimento delle turbine. Le turbine eoliche, le navicelle e le pale possono tutte adottare differenti passi, rotazioni e orientamenti differenti (*vedi Figura 1.3.1.-1.*).

Questa forma estremamente complessa e dinamica di movimento tridimensionale è difficile da valutare e l'effetto del Flicker o del Glint può variare o cambiare, secondo l'orientamento della turbina, la direzione del vento, la sua velocità, l'angolo del Sole e l'epoca dell'anno specifica.

³ Fonte: Department for Business Enterprise & Regulatory Reform (BERR), UK.

⁴ Per maggiori chiarimenti sul fenomeno della Fotosensibilità, si veda www.epilepsy.com/articles/ar_1141663451.html. Si noti che mentre la luce intermittente nelle gamme di circa 5-30 Hertz può causare fenomeni di attacchi epilettici in individui sensibili, rapporti inferiori ai 2 Hertz come quelli connessi con le turbine eoliche non li generano.

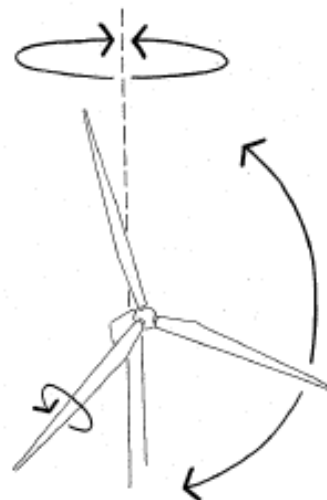


Figura 1.3.1.-1.: Le turbine eoliche, le navicelle, e le pale possono tutte adottare differenti passi, rotazioni, e orientamenti differenti.

Una ricerca sulla percezione visiva della dinamica delle turbine condotta negli Stati Uniti [Thayer & Freeman, 1987], ha stabilito che: «da una parte la gente trova i rotori in movimento più attraenti di quelli statici, in questo modo il movimento è stato identificato con un effetto visivo percepito in maniera più blanda da alcuni commentatori. Mentre altrove sembra essere accordo che il movimento renda le turbine più cospicue di ciò che sarebbero al contrario». Mentre è difficile modellare o predire in maniera accurata l'impatto di questi effetti, determinati aspetti possono essere identificati e notati per comprenderne il potenziale effetto.

1.2.1.1

Fenomeno del Glint

Il Glint è causato dal riflesso dei raggi solari sulle pale rotanti di una turbina eolica con una superficie lucida, che può causare un effetto "lampeggiante" (vedi Figura 1.3.1.1.-1.). La ricerca ha indicato che il Glint dalle superfici altamente riflettenti può essere osservato fra i 10 e i 15 km. Nel caso di una turbina eolica, assumendo che la superficie della turbina sia riflettente, ciò dipenderebbe dai seguenti fattori:

- Angolo del Sole;
- Orientamento della turbina;
- Passo della pala;
- Riflettività delle superfici della navicella e della pala;
- Velocità di rotazione delle pale.

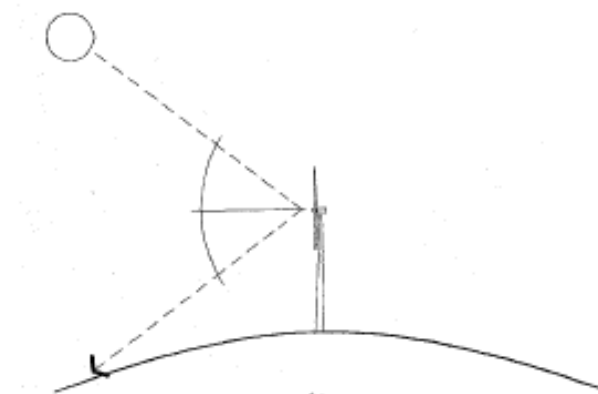


Figura 1.3.1.1.-1.: Il Glint è causato dal riflesso dei raggi solari sulle pale della turbina.

1.2.1.2

Fenomeno del Flicker

Il Flicker si verifica quando i raggi solari vengono intercettati tramite le pale rotanti di una turbina eolica (vedi Figura 1.3.1.2.-1.). Questo effetto dipende da un certo numero di fattori, quali:

- 1.2.1.2.1 Angolo del Sole;
- 1.2.1.2.2 Orientamento della turbina eolica;
- 1.2.1.2.3 Passo della pala;
- 1.2.1.2.4 Velocità di rotazione.

Questo effetto è comunemente apprezzabile quando le pale della turbina si trovano di fronte a un angolo solare basso, oltre una distanza di 350-500 metri, mentre si collima attraverso le pale.

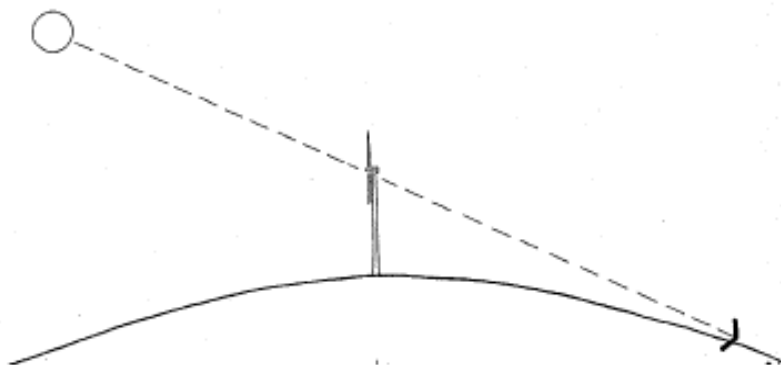


Figura 1.3.1.2.-1.: Il Flicker si verifica quando i raggi solari sono osservati tramite le pale rotanti di una turbina eolica.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

1.2.1.3	Fenomeno dello Shadow
----------------	------------------------------

Lo Shadow Flicker è diverso dal fenomeno stroboscopico causato dal taglio intermittente della luce solare dietro le pale rotanti delle pale eoliche. L'intensità dello Shadow Flicker è definita come la differenza o variazione di luminosità in una determinata posizione in presenza e in assenza di ombra.

Anche se i problemi causati dallo Shadow Flicker sono rari, per i siti in cui questo fenomeno può essere un problema, è necessario eseguire un'analisi per quantificarne l'effetto. L'impatto stimato dello Shadow Flicker causato da una turbina eolica dipende da numerosi fattori; la probabilità di questo avvenimento e la durata di tale effetto sono condizionati da:

- 1.2.1.3.1** Il periodo dell'anno;
- 1.2.1.3.2** La posizione del Sole nel cielo;
- 1.2.1.3.3** La frequenza delle giornate con cielo sereno e poco nuvoloso (specialmente alle basse elevazioni sopra l'orizzonte);
- 1.2.1.3.4** La direzione prevalente del vento (determina la direzione in cui si orienterà il rotore);
- 1.2.1.3.5** I periodi e la durata del funzionamento della turbina;
- 1.2.1.3.6** La proporzione di ore diurne durante le quali le turbine sono operative;
- 1.2.1.3.7** L'altezza dell'hub e il diametro rotore della turbina;
- 1.2.1.3.8** La direzione e la distanza del recettore rispetto alla/e turbina/e;
- 1.2.1.3.9** Il terreno e il paesaggio di un'area;
- 1.2.1.3.10** Gli ostacoli, quali gli alberi e le costruzioni, nella linea di mira, e la dimensione e la posizione di una zona di osservazione, quali una finestra o un patio. Ogni latitudine sul globo ha la propria firma d'ombra in termini di area influenzata entro un determinato periodo di ombre da un oggetto⁷ (vedi Figura 1.3.1.3.-1.). Vicino all'Equatore la firma assomiglia ad una farfalla, mentre più lontano dall'Equatore diventa più a forma di rene e vicino ai poli si trasforma quasi in un cerchio.

⁵ Fonte: Danish Wind Industry Association (link: www.windpower.org).

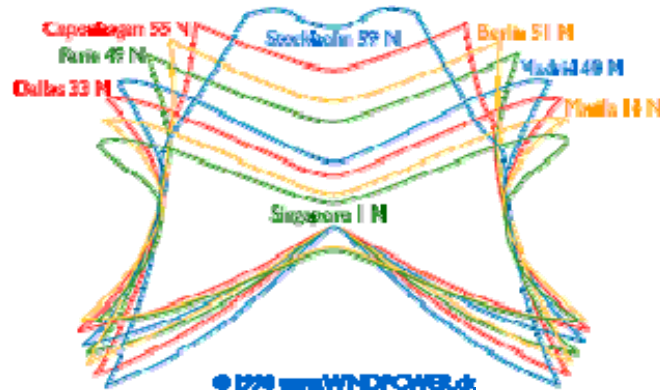


Figura 1.3.1.3.-1.: Firma d'ombra in termini di area influenzata al variare della latitudine.

La dimensione dell'ombra del rotore e il numero dei minuti d'ombra all'anno nelle vicinanze della turbina variano in proporzione alla zona del rotore, secondo le indicazioni delle tre immagini riportate in **Figura 1.3.1.3.-2.** Le zone rosse indicano i modelli annuali dell'ombra con più di 30 ore di ombra ("Caso peggiore") dai rotori di turbina del vento di 43 m, 53 m, e 63 m montate sulle torri da 50 m e computate per 55° di latitudine.



Figura 1.3.1.3.-2.: La dimensione dell'ombra del rotore e il numero dei minuti d'ombra all'anno nelle vicinanze della turbina variano in proporzione alla zona del rotore.

L'altezza del mozzo di una turbina eolica è d'importanza secondaria per l'ombra dal rotore. La stessa ombra sarà estesa per una più grande zona, in modo tale che nelle vicinanze della turbina per esempio fino a 1.000 m, il numero dei minuti all'anno con le ombre diminuiranno realmente. Le quattro immagini riportate in **Figura 1.3.1.3.-3.** mostrano l'ombra proiettata durante un anno ("Caso peggiore") da una turbina eolica con un diametro del rotore di 43 m, disposta con quattro altezze differenti del mozzo e computata per 55° di latitudine. Le zone rosse rappresentano le zone con più di 30 ore delle ombre. Se si è più lontani di circa 500-1.000 m da un rotore di una turbina eolica, esso non sembrerà tagliare la luce, ma la turbina sarà considerata come un oggetto con il sole dietro di esso. Di conseguenza, non è necessario generalmente da considerare la proiezione dell'ombra a tali distanze.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

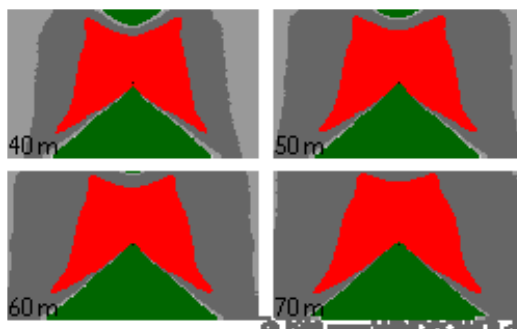


Figura 1.3.1.3-3.: L'altezza del mozzo di una turbina eolica è di importanza secondaria per l'ombra dal rotore.

Quanto più l'osservatore sarà lontano dalla turbina, tanto meno pronunciato sarà l'effetto. Esistono tre diversi motivi per questo:

1. Ci sono pochi periodi dell'anno in cui il Sole è abbastanza basso per proiettare un'ombra lunga;
2. Quando il Sole è basso è più probabile che sia oscurato dalle nuvole sull'orizzonte o per la presenza di costruzioni e di vegetazione;
3. il centro dell'ombra del rotore passa più rapidamente sopra la terra riducendo la durata dell'effetto.

A distanza, le pale non coprono il Sole ma lo mascherano solo parzialmente, sostanzialmente indebolendo l'ombra. Questo effetto si presenta in primo luogo con l'ombra dalla punta della pala, le punte in sezione sono più sottili che nel resto della pala. Le ombre dalle punte si estendono più lontano e così soltanto un effetto molto debole può essere osservato a distanza dalle turbine.

Il Report "Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health", al Paragrafo 3.4.b: "3.4.b. Shadow Flicker Considerations and Potential Health Effects"⁸ riporta

⁶ Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health; Authors: 1. Jeffrey M. Ellenbogen, MD; MMSc Assistant Professor of Neurology, Harvard Medical School Division Chief, Sleep Medicine, Massachusetts General Hospital; 2. Sheryl Grace, PhD; MS Aerospace & Mechanical Engineering Associate Professor of Mechanical Engineering, Boston University; 3. Wendy J Heiger-Bernays, PhD Associate Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health Chair, Lexington Board of Health; 4. James F. Manwell, PhD Mechanical Engineering; MS Electrical & Computer Engineering; BA Biophysics Professor and Director of the Wind Energy Center, Department of Mechanical & Industrial Engineering University of Massachusetts, Amherst; 5. Dora Anne Mills, MD, MPH, FAAP State Health Officer, Maine 1996–2011 Vice President for Clinical Affairs, University of New England; 6. Kimberly A. Sullivan, PhD Research Assistant Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health; 7. Marc G. Weisskopf, ScD Epidemiology; PhD Neuroscience Associate Professor of Environmental Health and Epidemiology Department of Environmental Health & Epidemiology, Harvard School of Public Health; 8. Facilitative Support provided by Susan L. Santos, PhD, FOCUS GROUP Risk Communication and Environmental Management Consultants.

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

quanto segue: «Lo shadow flicker è causato quando accadono variazioni di intensità luminosa dalle pale rotanti delle pale eoliche, che proiettano ombre rotanti. Queste ombre si muovono sulla terra, sugli edifici e sulle strutture e variano in termini ritmo di frequenza e intensità.

Lo shadow flicker può variare significativamente in funzione della velocità del vento e della durata, dalla posizione geografica della luce solare, e dalla distanza delle pale della turbina da strutture o edifici pertinenti.

In generale, i rami dello shadow flicker fuori dalla turbina eolica, in una caratteristica area geografica a forma di ala di farfalla declinante, presenterà quantità elevate di sfarfallio vicino alla turbina e meno sfarfallio nelle parti esterne dell'area geografica (New England Wind Energy Education Project (NEWEEP), 2011; Smedley et al., 2010).

Lo shadow flicker si verifica fino a circa 1.400 m dalla turbina eolica, ma il più forte sfarfallio è fino a 400 m dalla turbina, quando si verifica (NEWEEP, 2011).

Lo shadow flicker solito si verifica al mattino e alla sera, in prossimità dell'alba e del tramonto, quando le ombre sono più lunghe. Inoltre, lo shadow flicker può variare nelle diverse stagioni dell'anno a seconda della posizione geografica della turbina eolica, così che in alcuni siti lo sfarfallio si verificherà solo durante i mesi invernali, mentre in altri lo shadow flicker si verificherà durante quelli estivi.

Altri fattori che determinano percentuali di shadow flicker e intensità includono oggetti del paesaggio (ad esempio, gli alberi e le altre ombre esistenti) e modelli climatici. Ad esempio, non c'è shadow flicker nelle giornate nuvolose senza sole rispetto alle giornate di sole. Inoltre, la velocità di shadow flicker (passaggio di ombre al secondo) aumenta con la velocità del rotore (NRC, 2007). In più, quando più turbine si trovano relativamente vicine le une alle altre, si possono verificare sfarfallii combinati dalle diverse pale delle diverse turbine eoliche e, viceversa, se ci si trova su diverse aree geografiche attorno alle strutture, lo shadow flicker può verificarsi in diversi momenti della giornata sullo stesso sito dalle diverse turbine; pertanto, la progettazione preliminare della localizzazione delle turbine è molto importante (Harding et al., 2008).».

Lo Shadow Flicker è funzione di diversi fattori, compresa la posizione delle persone rispetto alla turbina eolica, la velocità e la direzione del vento, la variazione diurna variazione della luce solare, la latitudine geografica della locazione, la topografia locale, e la presenza di eventuali ostacoli (A. Nielsen, 2003).⁹

Lo shadow flicker non è importante in siti distanti (per esempio, maggiore di 1.000 piedi da una turbina, ovvero circa 305 metri), eccetto durante la mattina e la sera, quando le ombre sono lunghe. Tuttavia, l'intensità della luce solare è anche inferiore durante la mattina e la sera; questo tende a ridurre gli effetti delle ombre e dello Shadow Flicker. La velocità dello Shadow Flicker aumenta con la velocità del rotore della turbina eolica.

⁷ Shadow-Flicker Modeling Authors: Arne Nielsen, Wind Engineers, Inc.. Prepared for Zilkha Renewable Energy, Portland, OR 97204 (Nov. 20, 2003) (link: http://www.efsec.wa.gov/wildhorse/apl/Exhibits%20PDF/E09_Shadow%20Flicker%20Briefing%20Memo.pdf).

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 13</p>
---------------------------------------	--	----------------

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

1.2.2.	FISICA DEL FENOMENO DELLO SHADOW FLICKER
---------------	---

Di seguito si riporta la sintesi dell'Appendice B: "Appendix B Wind Turbines - Shadow Flicker - AB.1 Shadow Flicker and Flashing" del Report "Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health"¹⁰ in merito alla fisica del fenomeno dello Shadow Flicker.

«Il fenomeno dello shadow flicker si verifica durante un periodo limitato di tempo in un anno, a seconda dell'altitudine del sole, α_s ; l'altezza della turbina, H , il raggio del rotore, R , e l'altezza, la direzione, e la distanza al punto di osservazione.

In qualsiasi momento, la massima distanza alla quale si estenderà un'ombra tremolante da una turbina eolica, sarà data da:

$$x_{\text{shadow}} = (H + R - h_{\text{view}}) / \tan(\alpha_s) \quad (1)$$

Dove h_{view} è l'altezza del punto di osservazione.

L'altitudine solare dipende dalla latitudine, il giorno dell'anno, e il tempo come indicato nella seguenti equazioni (Duffie e Beckman, 2006):

$$\alpha_s = 90^\circ - \cos^{-1}[\cos(\delta) \cos(\phi) \cos(\omega) + \sin(\delta) \sin(\phi)] \quad (2)$$

Dove δ = declinazione dell'asse, ϕ = latitudine della terra e ω = l'angolo orario.

La declinazione è trovata dalla seguente equazione:

$$\delta = 23,4 \sin(360(284 + n)/360) \quad (3)$$

Dove n = giorno dell'anno.

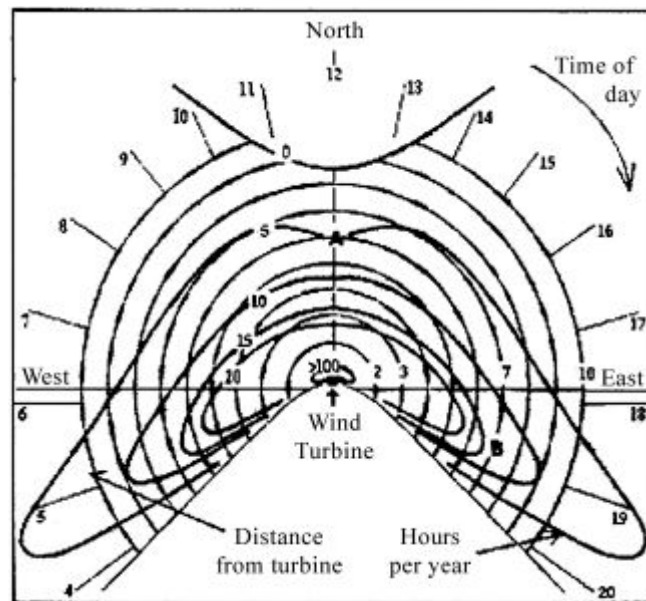
L'angolo orario è trovato dalle ore da mezzogiorno (ora solare, negativa prima di mezzogiorno, positiva dopo mezzogiorno), diviso per 15 per convertirlo in gradi.

⁸ Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health; Authors: 1. Jeffrey M. Ellenbogen, MD; MMSc Assistant Professor of Neurology, Harvard Medical School Division Chief, Sleep Medicine, Massachusetts General Hospital; 2. Sheryl Grace, PhD; MS Aerospace & Mechanical Engineering Associate Professor of Mechanical Engineering, Boston University; 3. Wendy J Heiger-Bernays, PhD Associate Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health Chair, Lexington Board of Health; 4. James F. Manwell, PhD Mechanical Engineering; MS Electrical & Computer Engineering; BA Biophysics Professor and Director of the Wind Energy Center, Department of Mechanical & Industrial Engineering University of Massachusetts, Amherst; 5. Dora Anne Mills, MD, MPH, FAAP State Health Officer, Maine 1996–2011 Vice President for Clinical Affairs, University of New England; 6. Kimberly A. Sullivan, PhD Research Assistant Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health; 7. Marc G. Weisskopf, ScD Epidemiology; PhD Neuroscience Associate Professor of Environmental Health and Epidemiology Department of Environmental Health & Epidemiology, Harvard School of Public Health; 8. Facilitative Support provided by Susan L. Santos, PhD, FOCUS GROUP Risk Communication and Environmental Management Consultants.

Un altro angolo rilevante è l'azimut solare. Questo indica l'angolo del sole rispetto alla direzione di riferimento determinato (generalmente il Nord) in un particolare momento. Ad esempio, il Sole è sempre nel Sud nel mezzogiorno solare, quindi la sua azimutale è di 180° in quel momento. L'azimut solare è importante poiché determina l'angolo dell'ombra della turbina eolica rispetto alla torre (vedere gli studi di Duffie e Beckman (2006) per i dettagli sul calcolo dell'azimut solare).

I siti sono tipicamente caratterizzati da grafici come quello illustrato in **Figura 1.3.2.-1** per una localizzazione in Danimarca (EWEA, 2004). Il grafico indica il numero di ore per anno di shadow flicker in funzione della direzione e della distanza (misurata in unità di altezza del mozzo). Nell'esempio mostrato, sono considerati due punti di osservazione. Uno di loro (A) è direttamente a Nord della turbina, a una distanza di 6 volte l'altezza del mozzo. L'altra (B) si trova a Sud-Est a una distanza di 7 volte l'altezza del mozzo. La Figura mostra che il primo punto di osservazione sperimenterà lo shadow flicker dalla turbina per 5 ore all'anno, mentre il secondo punto sperimenterà lo shadow flicker dalla turbina per 12 ore all'anno. (...).

Figura 1.3.2.-1: Diagramma dello Shadow Flicker (EWEA, 2004). A e B sono i punti di osservazione. Si noti che le equazioni assumono condizioni di cielo sereno e assenza di pioggia, nuvole, ecc..



RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

1.3	LIMITI DI ESPOSIZIONE ALLO SHADOW FLICKER NELLA NORMATIVA INTERNAZIONALE E NELLA LETTERATURA DI SETTORE
------------	--

Le pale delle turbine eoliche, ruotando, proiettano ombre in movimento che potrebbero, sotto certe condizioni, provocare il fenomeno Flicker. Una valutazione utile dello Shadow Flicker è data da Clarke (A.D Clarke, "A case of Shadow Flicker/flashing: assessment and solution", Techno Policy group, Open University, Walton Hall, Milton Keynes).

Lo Shadow Flicker è misurato solitamente attraverso il numero di ore all'anno durante le quali una dimora sarebbe esposta al Flickering da parte delle turbine eoliche poste nelle vicinanze. Mentre questo è soprattutto un aspetto geometrico, altri fattori devono essere presi in considerazione; anche occasionalmente, quando il Sole è allineato geometricamente con la turbina e il ricettore, vari fattori possono impedire il Flicker. Per esempio, **non è possibile che lo Shadow Flicker possa verificarsi quando il Sole non è visibile, cioè durante i giorni nuvolosi o nebbiosi, o se il rotore della turbina è fermo. Gli ostacoli situati fra una turbina eolica e l'osservatore, quali gli alberi, le colline e le costruzioni, ridurranno o elimineranno la durata e/o l'intensità dello Shadow Flicker.**

Fortunatamente, è possibile predire abbastanza esattamente la probabilità di quando e per quanto tempo si può verificare un effetto di Flicker; infatti, ricorrendo all'astronomia e alla trigonometria è possibile computare un probabile scenario "Caso peggiore" (o "Worst Case"), cioè una situazione in cui c'è sempre il Sole, il vento sta soffiando continuamente e quando il vento e il rotore della turbina seguono il Sole deviando la turbina esattamente come i movimenti del Sole.

È importante notare che gli effetti di Shadow, Flicker e Glint sono spesso descritti come causanti di un effetto stroboscopico che può causare fastidio alla gente all'interno della zona adiacente al parco eolico. Mentre questo effetto può accadere con le piccole turbine eoliche, che funzionano a più alti giri al minuto, la velocità di funzionamento delle grandi turbine tradurrebbe un effetto visivo molto più lento, limitando il potenziale fastidio.

Lo Shadow Flicker si presenta quando le pale del rotore proiettano delle ombre o delle sagome in movimento, attraverso il paesaggio o le dimore poste nelle vicinanze. La preoccupazione principale è l'impatto sulle costruzioni vicine e i possibili effetti psicologici su chi soffre di epilessia (in questo momento il 2% della popolazione del Regno Unito).

Studi europei e statunitensi di settore hanno suggerito che nello scenario "Worst Case" il limite di Shadow Flicker debba essere stabilito pari a 100 minuti/anno.

Tuttavia, lo Shadow Flicker è raramente considerato un problema¹¹ con riferimento ad una wind farm: esso diventa un potenziale problema solo durante i periodi in cui la gente che dimora nelle

⁹ Fonte: Dorenell Wind Farm Environmental Statement – Infinergy (May 2008).

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

abitazioni, localizzate nei pressi degli aerogeneratori, è sveglia, le finestre non sono oscurate (tende, infissi, ecc.) e una o più turbine eoliche sono in vista. Se una turbina eolica non è in vista durante le ore dello Shadow Flicker stimato, allora il fenomeno del Flicker passerà inosservato; perciò, non esistendo una procedura standard per la valutazione del fenomeno, non esistono delle linee guida disponibili su quanto l'esposizione all'ombreggiamento indotto possa essere accettabile, **dunque il fenomeno dello Shadow Flicker non è generalmente regolato esplicitamente dalle autorità competenti per l'assetto territoriale.**

International Review of Policies and Recommendations for Wind Turbine Setbacks from Residences: Setbacks, Noise, Shadow Flicker, and Other Concerns¹²

Le politiche tedesche riguardo il rumore e lo shadow flicker in materia di impianti eolici sono spesso assunte da altri paesi e associazioni, in particolare la loro politica in materia di Shadow Flicker. Tuttavia, la Germania non ha requisiti o raccomandazioni riguardo la distanza delle turbine eoliche dalle residenze.

Molti governi statali tedeschi raccomandano un offset di 1000 metri (3.281 piedi) delle turbine eoliche dalle residenze, ma un offset minimo può essere pari a 300 metri (984 piedi).^{13 14}

I limiti della Germania dello Shadow Flicker sono indicati in un gran numero di documenti governativi e di associazione dell'energia eolica in tutto il mondo. Tuttavia, alcuni di questi documenti fanno riferimento ai limiti originali, mentre altri fanno semplicemente riferimento ad altri paesi o associazioni che fanno riferimento al regolamento originale in tedesco. Per questo motivo, c'è molta confusione tra ciò che sono i regolamenti della Germania sullo Shadow Flicker e i regolamenti ritratti come giurisprudenza, legge federale, statale o locale, o semplicemente una raccomandazione a livello federale o statale.

In Germania sono stati condotti due studi per quanto riguarda lo Shadow Flicker.^{15 16}

Il primo studio, realizzato nel 1999, ha intervistato più di 200 partecipanti che vivono nei pressi di turbine eoliche, esposti allo shadow flicker. ***I ricercatori hanno scoperto un aumento dei livelli dell'effettivo tempo di esposizione allo shadow flicker correlati con un aumento dei livelli di stress ed effetti***

¹⁰ International Review of Policies and Recommendations for Wind Turbine Setbacks from Residences: Setbacks, Noise, Shadow Flicker, and Other Concerns; Minnesota Department of Commerce: Energy Facility Permitting (October 19, 2011); Authors: Kathryn M. B. Haugen.

¹¹ Dania Röpke, personal communication, August 18, 2011.

¹² (Christoph Brand, personal communication, August 17, 2011).

¹³ Belästigung durch periodischen schattenwurf von windenergieanlagen, Pohl, J, Faul, F, & Mausfeld, R. (1999). [Annoyance caused by periodic shadow casting (or shadow flickering) of wind turbines] (<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utreddningar/Feldstudie.pdf>).

¹⁴ Belästigung durch periodischen schattenwurf von windenergieanlagen: Laborpilotstudie, Pohl, J, Faul, F, & Mausfeld, R. (2000) [Harassment by periodic shadow of wind turbines: Laboratory pilot study]. (<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utreddningar/Laborstudie%20Schattenwurf.pdf>).

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p style="text-align: right;">pag. 17</p>
---------------------------------------	--	---

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

negativi, con coloro che subiscono più di 15 ore di effettivo Shadow Flicker, con riduzione della qualità della vita e alti livelli di fastidio quotidiano.¹⁷. Questi risultati hanno influenzato le raccomandazioni tedesche tra cui la “WEA-shadow-notes”¹⁸. Tuttavia, uno dei ricercatori ha dichiarato che i livelli di stress e fastidio aumentano così come la distanza alle turbine diminuisce in tutte le direzioni, non soltanto le direzioni in cui si verifica lo shadow flicker dovuto al tramonto/alba. Ciò implica che **il rumore delle turbine eoliche ha un impatto maggiore sui livelli di stress rispetto allo Shadow Flicker.**¹⁹.

Update of UK Shadow Flicker Evidence Base - Final Report²⁰

Il report si concentra esclusivamente sull'effetto dello shadow flicker causato da turbine eoliche *on-shore* su larga scala (da circa 500 kW in su) e non considera le distinte condizioni di shadow flicker e gli impatti che sono legati allo shadow flicker causato da turbine eoliche al di sotto di una certa taglia (piccolo eolico o micro eolico, 0,3-10 kW).

Il termine “Shadow Flicker” si riferisce all'effetto di sfarfallio generato quando le pale eoliche rotanti proiettano periodicamente un'ombra sulle proprietà confinanti mentre girano, attraverso le aperture forzate come le finestre. L'entità degli effetti dello Shadow Flicker varia sia nello spazio che nel tempo, e dipende da una serie di condizioni ambientali che coincidono in un determinato punto nel tempo, tra cui la posizione e l'altezza del sole, la velocità e la direzione del vento, la nuvolosità, e la prossimità della turbina eolica per un recettore sensibile.

Un altro fenomeno distinto che viene spesso confuso con l'“effetto Shadow Flicker” è quello dell'“effetto strobo”. L'effetto strobo si riferisce al lampeggio della luce riflessa che può essere visibile da una certa distanza. Questo fenomeno è stato ampiamente migliorato dallo sviluppo di uno standard di settore (grigio chiaro semi opaca) per la finitura colore e la superficie delle pale delle turbine eoliche, come proposto dallo studio ETSU (1999) e dalla Companion Guide to PPS22 (2004). Per chiarezza, si precisa che nel report “Update of UK Shadow Flicker Evidence Base - Final Report”, P. Brinckerhoff non ha tenuto conto del fenomeno "effetto stroboscopico".

¹⁵ Belästigung durch periodischen schattenwurf von windenergieanlagen, Pohl, J, Faul, F, & Mausfeld, R. (1999). [*Annoyance caused by periodic shadow casting (or shadow flickering) of wind turbines*] (<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utreddningar/Feldstudie.pdf>).

¹⁶ (Johannes Pohl, personal communication, August 25, 2011).

¹⁷ (Rainer Mausfeld, personal communication, August 25, 2011).

¹⁸ Update of UK Shadow Flicker Evidence Base - Final Report; Drive for The Department of Energy and Climate Change, UK; Authors: Parsons Brinckerhoff, Amber Court, William Armstrong.

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

La guida alla pianificazione nel Regno Unito (Companion Guide to PPS22, PAN45, Best Practice Guidance to PPS18, e le Welsh Planning Guidelines) richiede agli sviluppatori di studiare l'impatto dello shadow flicker, ma non specifica le metodologie da adottare.

United Kingdom Guidance: Planning for Renewable Energy – A Companion Guide to PPS22 Office of the Deputy Prime Minister (2004), England

«It [shadow flicker] only occurs inside buildings where the flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the site. (...) A single window in a single building is likely to be affected for a few minutes at certain times of the day during short periods of the year. The likelihood of this occurring and the duration of such an effect depends upon:

- *the direction of the residence relative to the turbine(s);*
- *the distance from the turbine(s);*
- *the turbine hub-height and rotor diameter;*
- *the time of year;*
- *the proportion of day-light hours in which the turbines operate;*
- *the frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon); and,*
- *the prevailing wind direction.»* (Page 176).

(Trad.: Esso [shadow flicker] si verifica soltanto all'interno di edifici in cui il tremolio appare attraverso un'apertura stretta. La durata stagionale di questo effetto può essere calcolata a partire dalla geometria della macchina e dalla latitudine del sito. (...) Una sola finestra in un unico edificio rischia di essere colpita per pochi minuti in certi momenti della giornata durante brevi periodi dell'anno. La probabilità che ciò si verifichi e la durata di un tale effetto dipende da:

- La direzione della residenza rispetto alla/e turbina/e;
- La distanza dalla/e turbina/e;
- L'altezza dell'hub della turbina e il diametro rotore;
- Il periodo dell'anno;
- La percentuale di ore di luce diurna in cui operano le turbine eoliche;
- La frequenza di sole e di cielo senza nuvole (in particolare alle basse altitudini sopra l'orizzonte); e,
- La direzione prevalente del vento.).

«The further the observer is from the turbine the less pronounced the effect will be. There are several reasons for this:

- *there are fewer times when the sun is low enough to cast a long shadow;*

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 19</p>
---------------------------------------	--	----------------

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

- *when the sun is low it is more likely to be obscured by either cloud on the horizon or intervening buildings and vegetation; and,*
- *the centre of the rotors shadow passes more quickly over the land reducing the duration of the effect.» (Page 177).*

(Trad.: Più lontano si trova l'osservatore dalla turbina, meno pronunciato sarà l'effetto. Ci sono diverse ragioni per questo:

- Ci sono meno momenti in cui il sole è abbastanza basso per proiettare un'ombra lunga;
- Quando il sole è basso, è più probabile che sia oscurato da una nuvola all'orizzonte o che intervengano edifici e vegetazione; e,
- Il centro dell'ombra del rotore passa più rapidamente sulla terra riducendo la durata dell'effetto.).

«*At distance, the blades do not cover the sun but only partly mask it, substantially weakening the shadow. This effect occurs first with the shadow from the blade tip, the tips being thinner in section than the rest of the blade. The shadows from the tips extend the furthest and so only a very weak effect is observed at distance from the turbines.*» (Page 177) (Trad.: A distanza, le pale non coprono il sole, ma lo mascherano solo in parte, indebolendo notevolmente l'ombra. Questo effetto si verifica prima con l'ombra dalla punta della pala, essendo le punte più sottili in sezione rispetto al resto della pala. Le ombre dalle punte si estendono più lontano e così solo un effetto molto debole si osserva a distanza dalle turbine.).

«*Shadow flicker can be mitigated by siting wind turbines at sufficient distance from residences likely to be affected. Flicker effects have been proven to occur only within ten rotor diameters of a turbine. Therefore if the turbine has 80 m diameter blades, the potential shadow flicker effect could be felt up to 800 m from a turbine.*» (Page 177) (Trad.: Lo Shadow flicker può essere mitigato ubicando le turbine eoliche a una distanza sufficiente da recettori che possono essere colpiti. **Gli effetti del flicker hanno dimostrato di verificarsi solo entro dieci volte il diametro rotore di una turbina.** Pertanto, se la turbina ha 80 m di diametro delle pale, il potenziale effetto di shadow flicker potrebbe essere sentito fino a 800 m da una turbina.).

Nel Regno Unito esistono due fonti letterarie ufficiali per questo fenomeno, il primo è il: **United Kingdom Guidance: Planning Advice Note (PAN) 45: Renewable Energy Technologies Scottish Executive (2002), Scotland** che fornisce le seguenti informazioni circa il fenomeno dello *Shadow Flicker* (Para 64): «*Under certain combinations of geographical position, time of day and time of year, the sun may pass behind the rotor and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off; the effect is known as "Shadow Flicker". It occurs only within buildings where the Flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the potential site. Where this could be a problem, developers should provide*

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), Shadow Flicker should not be a problem» (Paragraph 64) (Trad.: **Nella maggior parte dei casi, tuttavia, in cui è prevista la separazione tra le turbine eoliche e le abitazioni vicine (in linea di massima a 10 diametri del rotore), lo Shadow Flicker non dovrebbe essere un problema.**); ovvero, in determinate combinazioni di posizione geografica periodo del giorno e periodo dell'anno, il Sole può passare dietro il Rotore di una turbina eolica e proiettare un'ombra sopra le proprietà vicine. Quando le pale ruotano, l'ombra appare e scompare rapidamente ("on and off"); l'effetto è conosciuto come "Shadow Flicker". Ciò avviene soltanto all'interno delle costruzioni in cui l'intermittenza della luce compare attraverso un'apertura stretta, quale ad esempio una finestra. La durata stagionale di questo effetto può essere calcolata sulla base della geometria della macchina e della latitudine del potenziale sito. Laddove questo possa rappresentare un problema, gli sviluppatori dovrebbero fornire calcolazioni per quantificare l'effetto. In molti casi, comunque, laddove sia fornita la separazione tra le turbine eoliche e le abitazioni poste nei paraggi (come regola 10 volte il diametro del Rotore), lo "Shadow Flicker" non dovrebbe costituire un problema.

L'altro riferimento letterario è contenuto nel **Planning for Renewable Energy, A Companion Guide to PPS 22**, che, di fatto, afferma quanto segue:

«Sotto alcune combinazioni di posizione geografica e ora del giorno, il Sole può passare dietro i rotori di una turbina eolica e proiettare un'ombra sulle proprietà vicine. Quando le pale ruotano, l'ombra va e viene; l'effetto è noto come "Shadow Flicker". Esso si verifica solo all'interno di edifici dove il fenomeno Flicker appare attraverso piccole aperture di finestre. La durata stagionale di questo effetto può essere calcolata dalla geometria delle macchine e dalla latitudine del sito. Nonostante i problemi causati dallo Shadow Flicker siano rari, per le zone gli sviluppi esistenti potrebbero essere soggetti a questo problema, i candidati alle concessioni di progetto per le installazioni di aerogeneratori dovrebbero fornire un'analisi per quantificare l'effetto. Una singola finestra in una singola costruzione rischia di essere colpita per pochi minuti a certe ore del giorno durante brevi periodi dell'anno. La probabilità che ciò avvenga e la durata dell'effetto dipende da:

- *la direzione dell'abitazione rispetto alla turbina (e);*
- *la distanza dalla turbina (e);*
- *l'altezza del Mozzo della turbina e il Diametro Rotore;*
- *la percentuale di ore di luce nelle quali le turbine operano;*
- *la frequenza della lucentezza della luce del Sole e il cielo senza nuvole (specialmente a basse altitudini sopra l'orizzonte);*
- *la direzione prevalente del vento.*

Solo gli edifici entro 130 gradi su entrambi i lati a nord rispetto alle turbine possono essere influenzate a queste latitudini nel Regno Unito, le turbine non proiettano grandi ombre sul loro lato meridionale.

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 21</p>
---------------------------------------	--	----------------

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

Più l'osservatore è lontano dalle turbine, meno pronunciato sarà l'effetto. Ci sono diverse ragioni per questo:

- *ci sono meno ore quando il Sole è basso per proiettare una lunga ombra;*
- *quando il Sole è basso è più probabile che sia oscurato da una nuvola all'orizzonte o case e vegetazione;*
- *il centro dell'ombra del Rotore passa più velocemente sulla terra, riducendo la durata dell'effetto.*

A una certa distanza, le pale non coprono il Sole, ma solo in parte lo mascherano, indebolendo notevolmente l'ombra. Questo effetto occorre prima con l'ombra dalla punta della pala, le punte diventano più sottili in sezione rispetto al resto della pala. Le ombre dalle punte si estendono il più lontano e così solo un debole effetto si osserva a distanza dalle turbine.

Il fenomeno dello Shadow Flicker può essere mitigato collocando a una sufficiente distanza le turbine dalle abitazioni che potrebbero essere affette dal fenomeno. L'effetto Flicker è stato provato che occorre solo all'interno di una distanza pari a 10 volte la lunghezza del Diametro Rotore. Quindi se le turbine hanno un diametro di pale che è di 100,00 m, l'effetto potenziale dello Shadow Flicker potrebbe essere sentito fino a 1.000,00 m da una turbina.²¹

Spagna

«PB contacted the Spanish Wind Energy Association to obtain information on shadow flicker guidance. A translation of the response received is below:

“In Spain, shadow flicker is not included in the planning requirements at present. As wind farms in Spain tend to be located very far away from any populated settlement, no complaints have been registered and no standard practice has been implemented.”» (Page 12) (Trad.: P. Brinckerhoff, autore del report “Update of UK Shadow Flicker Evidence Base - Final Report”, ha contattato l'associazione per l'energia eolica spagnola per ottenere informazioni sulle linee guida dello Shadow Flicker. Una traduzione della risposta ricevuta è riportata di seguito: “In Spagna, lo Shadow Flicker non è attualmente inclusa nei requisiti di pianificazione. Poiché in Spagna i parchi eolici tendono a essere situati molto lontano da qualsiasi insediamento popolato, non sono state riportate lamentele e nessuna pratica standard è stata implementata.”).

¹⁹ Fonte: Report Tewl368 Baydon Meadow Shadow Flicker Assesment, Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng The Energy Workshop Ltd 25 Queen's Square Business Park Huddersfield Road Honley HD9 6QZ, May 12th, 2006 Planning Guidance on Shadow Flicker, Planning Policy Statement 22 (PPS 22).

<p>pag. 22</p>	<p>SC Studio di Ingegneria Michele R.G. Curtotti</p>	<p style="text-align: right;">PROGETTISTA: Ing. Michele R.G. Curtotti</p> <p style="text-align: right;">Viale II Giugno, 385 71016 San Severo (FG) - ITALY</p>
----------------	---	---

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

Ireland: Planning Guidelines Department of Environment, Heritage and Local Government (Undated)

«At distances greater than 10 rotor diameters from a turbine, the potential for shadow flicker is very low. (...) [Predac²²]» (Page 33) (Trad.: **A distanze superiori a 10 diametri del rotore di una turbina, il potenziale per lo shadow flicker è molto basso. (...).**)

Canada: Draft HRM Wind Energy Generation Plan, Halifax Regional Municipality (2006)

«(...) The Danish Wind Energy Association reports that shadow flicker does not need to be assessed at distances more than 500 – 1000 metres from a wind turbine. Environmental assessments for other wind farms (e.g., by Renewable Energy Systems for the Meikle Carewe project in Aberdeenshire, Scotland) state that shadow flicker is only a potential problem at closer than 10 rotor diameters to the turbine. (...)» (Page 16) (Trad.: La Danish Wind Energy Association riferisce che **lo shadow flicker non ha bisogno di essere valutato a distanze maggiori di 500 - 1000 metri da una turbina eolica**. Valutazioni ambientali per gli altri parchi eolici (ad esempio, Renewable Energy Systems per il progetto Meikle Carewe in Aberdeenshire, Scozia) affermano che **lo shadow flicker è solo un problema potenziale a distanza inferiore a 10 diametri del rotore alla turbina.**)

Letteratura

Environmental, Health, and Safety Guidelines for Wind Energy, International Finance Corporation - World Bank Group (April 30, 2007); Environmental, Health, and Safety Guidelines for Wind Energy, International Finance Corporation - World Bank Group, Draft for Public Consultation (February, 2015)

Lo Shadow Flicker si verifica quando il sole passa dietro la turbina eolica e ne proietta l'ombra. Nel momento in cui le pale del rotore ruotano, le ombre passano sopra lo stesso punto provocando un effetto chiamato shadow flicker.

Lo shadow flicker può diventare un problema quando recettori potenzialmente sensibili (ad esempio, immobili residenziali, luoghi di lavoro, di apprendimento e/o spazi di assistenza sanitaria/impianti) si trovano nelle vicinanze, o hanno un orientamento specifico rispetto a un parco eolico.

Lo Shadow Flicker non è in genere considerato come un problema significativo soltanto per gli impianti di energia eolica *off-shore*, date le distanze tra le turbine eoliche e i potenziali recettori situati a terra.

²⁰ Le raccomandazioni sullo Shadow Flicker si basano sul sondaggio condotto da Predac, un'organizzazione sponsorizzata dall'Unione europea per promuovere le migliori pratiche per l'uso dell'energia, che si basa sull'esperienza di Belgio, Danimarca, Francia, Paesi Bassi, e Germania. "The shadow flicker recommendations are based on the survey by Predac, a European Union sponsored organization promoting best practice at energy use and supply which draws on experience from Belgium, Denmark, France, the Netherlands and Germany." (Page 13).

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 23</p>
---------------------------------------	--	----------------

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

I potenziali problemi legati allo Shadow Flicker tendono a essere più importanti alle alte latitudini, dove il sole è più basso nel cielo e quindi proietta ombre più lunghe che estenderanno il raggio entro il quale, potenzialmente, un significativo impatto da shadow flicker sarà sperimentato. ^{23 24 25 26}

Verkuijlen E, Westra CA. (1984) Shadow hindrance by wind turbines. *Proceedings of the European wind Energy Conference. October 1984, Hamburg, Germany*

Il documento, realizzato dal Dipartimento d'interfacoltà di Scienze Ambientali presso l'Università di Amsterdam, afferma che il maggiore impatto da shadow flicker delle turbine eoliche *on-shore* lo si può aspettare:

- All'interno di una struttura in cui la variazione di intensità della luce è più evidente;
- Quando le turbine ruotano tra i 5 e i 14 Hz (al di sotto dei 2,5 Hz e al di sopra dei 40 Hz, causerà "quasi nessun fastidio").
- Nelle zone ad Est Nord-Est e ad Ovest Nord-Ovest di una turbina.

Il documento suggerisce che tre fattori sono importanti per determinare l'impatto dello shadow flicker:

1. La posizione dei recettori rispetto alla turbina;
2. Il momento in cui l'ombra copre un posto particolare;
3. La durata dell'esposizione all'ombra.

²¹ Al fine di valutare il rispetto dei limiti raccomandati, lo shadow flicker deve essere modellato e previsto sulla base di un *worst-case scenario* astronomico, che viene definito come segue:

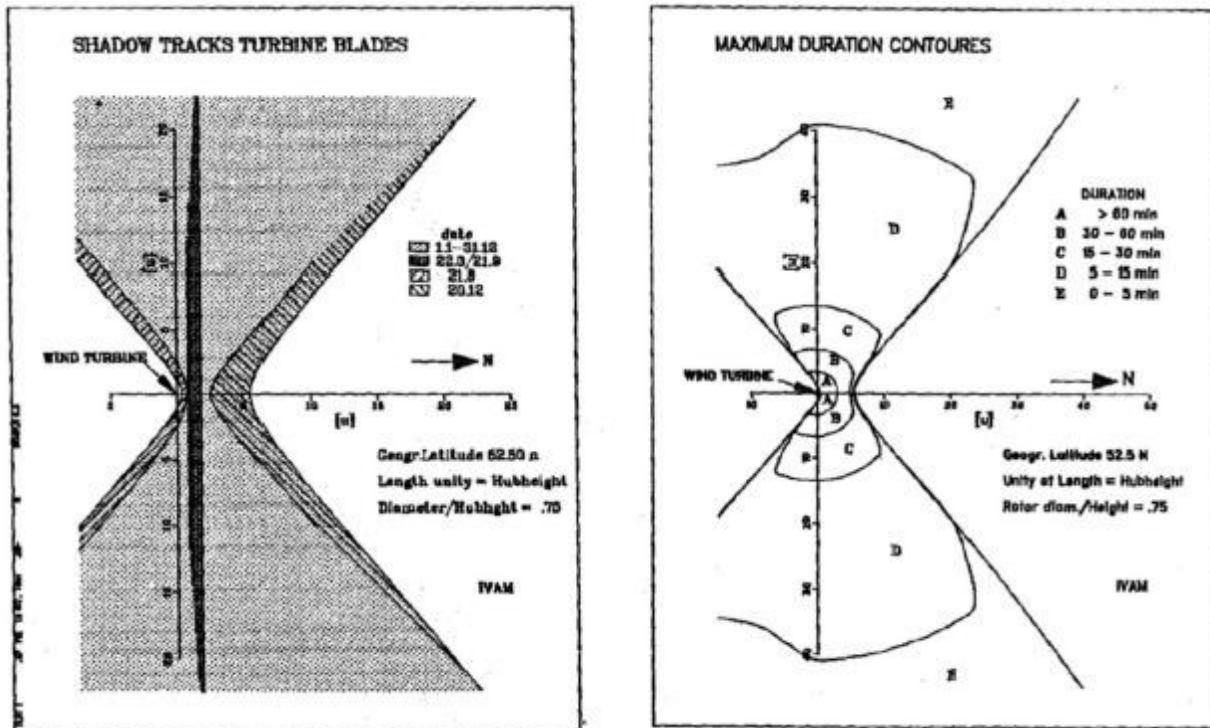
- Vi sono continue condizioni di sole e cielo permanentemente terso, dall'alba al tramonto;
- C'è vento sufficiente per far ruotare continuamente le pale della turbina eolica;
- Il Rotore è perpendicolare alla direzione incidente della luce solare;
- Angoli del sole inferiori ai 3° sopra il livello dell'orizzonte vengono ignorati (a causa della probabilità di schermatura della vegetazione e delle costruzioni);
- Distanze tra il piano del rotore e l'asse della torre sono trascurabili;
- Non è considerata la rifrazione della luce nell'atmosfera.

²² Federal States Committee for Pollution Control, Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windenergieanlagen [–"Information on Identifying and Assessing the Optical Emissions from Wind Turbines], (Germany, 2002) (link: [www.gewerbeaufsicht.niedersachsen.de/...](http://www.gewerbeaufsicht.niedersachsen.de/)).

²³ «Arrêté du 26 août 2011 relatif aux installations de production d'électricité utilisant l'énergie mécanique du vent au sein d'une installation soumise à autorisation au titre de la rubrique 2980 de la législation des installations classées pour la protection de l'environnement.».

²⁴ CanWEA, "An Introduction to Wind Energy Development in Canada" (2011) (link: www.canwea.ca/pdf/canwea-sitingreport-e.pdf).

Figura 1.4.-1.: Influenza dello Shadow Flicker di una turbina eolica of a wind turbine (figura estratta dal *paper*).



Il documento, inoltre, afferma che durante l'inverno il sole è più basso nel cielo che in estate, quindi in quel periodo la traccia giornaliera dell'effetto di shadow flicker si estenderà lontano dalla turbina.

Diverse misure di mitigazione sono proposte compresa la progettazione sensibile del sito, installazione di tende, e turbine eoliche con strategie shut-down. Il documento si espande sul delicato aspetto del progetto del sito d'installazione, suggerendo che lo shadow flicker avverrebbe in particolare nelle direzioni Nord Nord-Est e Ovest Nord-Ovest da una turbina eolica.

«Indoors the effect will be far greater, because in this case (almost) all the light that reaches the observer is modulated in intensity by the turbine blades.» (Page 356) (Trad.: All'interno l'effetto sarà molto maggiore, perché in questo caso (quasi) tutta la luce che raggiunge l'osservatore è modulato in intensità dalle pale di turbina.).

«The effect of light flicker on an observer depends largely on its frequency. In frequencies below 1 Hz every change in light intensity is felt as such. Beyond a certain frequency flickers are no longer perceived separately. This limit is called the flicker fusion frequency and as a rule lies at 50-80 Hz.» (Page 357) (Trad.: L'effetto di shadow flicker su un osservatore dipende in gran parte dalla sua frequenza. Per frequenze inferiori a 1 Hz, ogni variazione di intensità della luce è sentita come tale. Al di là di una certa frequenza, i

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

flicker non sono più percepiti separatamente. Questo limite è chiamata la frequenza di fusione di sfarfallio e di regola si trova a 50-80 Hz.).

«*Flicker frequencies approaching the fusion frequency may be felt to be a nuisance.*» (Page 357) (Trad.: Le frequenze di flicker che si avvicinano alla frequenza di fusione possono essere percepite come un fastidio.).


«*Various experiments for the lighting of traffic tunnels led to the conclusion that most persons (tested) feel flicker frequencies from 5-10 Hz as a nuisance (8-9) [Collins & Hopkinson (1957); Schreuder (1964)]. From other research projects, too, men have found to be maximally sensitive to flickers between 8 and 14 Hz. Below 2.5 Hz and beyond 40 Hz hardly any nuisance is caused.*» (Page 357) (Trad.: Diversi esperimenti per la illuminazione delle gallerie stradali hanno portato alla conclusione che la maggior parte delle persone (testato) sentono le frequenze di sfarfallio dai 5-10 Hz come un fastidio (8-9) [Collins & Hopkinson (1957); Schreuder (1964)]. Altri progetti di ricerca, inoltre, hanno trovato gli uomini essere massimamente sensibili allo sfarfallio tra gli 8 e i 14 Hz. Al di sotto dei 2,5 Hz e oltre i 40 Hz non è causato quasi nessun disturbo.).

«*It is well known that in some people suffering from epilepsy an epileptic seizure may be triggered by light flickers (photosensitive epilepsy). Around 2 % of the population are epileptics. In brain research about 5 % of people with epilepsy have shown anomalous EEG (electroencephalogram) reactions to flickers from 2.5 to 3 Hz. Higher frequencies (15-20 Hz) may even cause convulsions in epileptic persons (5) [Ginsburg (1970)].*» (page 357) (Trad.: È noto che in alcune persone che soffrono di epilessia un attacco epilettico può essere innescato da guizzi di luce (epilessia fotosensibile). Circa il 2% della popolazione è epilettica. Nella ricerca sul cervello circa il 5% delle persone con epilessia hanno dimostrato EEG (elettroencefalogramma) reazioni anomale di sfarfallio dai 2,5 ai 3 Hz. Frequenze più elevate (15-20 Hz) possono anche causare convulsioni in soggetti epilettici (5) [Ginsburg (1970)]).

«*Most wind turbines give a flicker frequency between 1 and 6 Hz. The aforesaid limit of 2.5 Hz falls within this frequency range. Some wind turbines, therefore may cause hindrance (when there is wind and sunshine).*» (Page 357) (Trad.: La maggior parte delle turbine eoliche danno una frequenza di sfarfallio tra gli 1 e i 6 Hz. Il suddetto limite di 2,5 Hz rientra in questo intervallo di frequenza. Alcune turbine eoliche, di conseguenza possono causare un impedimento (quando c'è vento e sole).).

«*(rotor diameter/hub height = 0.75; position 52.5° N and 4° E).*» (Page 357) (Trad.: (Diametro rotore/altezza del mozzo= 0,75; posizione 52.5° N e 4° E).).

«*When the sun is shining, the rotor shadow describes a track on the earth's surface from west to east as a result of the sun's daily orbit along the sky. Because the sun is lower in winter than in summer, the daily track will be farther from the turbine in winter (see Figure 1). At sunrise and sunset, the shadow shifts very fast. At sunset the shadow first becomes diffuse and then vanishes; at sunrise exactly the opposite occurs.*

<p>pag. 26</p>	 <p>Studio di Ingegneria Michele R.G. Curtotti</p>	<p>PROGETTISTA: Ing. Michele R.G. Curtotti</p> <p>Viale II Giugno, 385 71016 San Severo (FG) - ITALY</p>
----------------	--	---

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

Nevertheless it may cause nuisance during this brief spell of time. The shape of the rotor shadow depends on the relative positions of rotor and sun. The extremes are:

- a) *Rotor position perpendicular to the sunlight;*
- b) *Rotor position parallel to the sunlight.*

In the former case the rotor casts a shadow covering a elongate strip. In the latter case the shadow has an oval shape. When the rotor plane turns from position b. to position a. the oval will become narrower till it is transformed to a narrow strip. In our further calculations of the period during which the shadow covers on particular place, we always start from case a. Three factors are important for the eventual hindrance caused by the shadow:

- 1) *The place covered by the shadow;*
- 2) *The time at which the shadow covers a particular place*
- 3) *The duration of the shadow covering one particular place.” (Page 357)*

(Trad.: Quando il sole splende, l'ombra del rotore descrive una traccia sulla superficie della terra da Ovest a Est a causa dell'orbita solare quotidiana lungo il cielo. Poiché il sole è più basso in inverno che in estate, la traccia giornaliera sarà più lontana dalla turbina in inverno (vedi Figura 1). All'alba e al tramonto, l'ombra si sposta molto velocemente. Al tramonto l'ombra diventa prima diffusa e poi svanisce; al sorgere del sole si verifica esattamente il contrario. Tuttavia può causare fastidio durante questo breve periodo di tempo. La forma dell'ombra del rotore dipende dalle posizioni relative di rotore e sole. Gli estremi sono:

- a) Posizione del rotore perpendicolare alla luce solare;
- b) Posizione del rotore parallela alla luce solare.

Nel primo caso, il rotore proietta un'ombra che copre una striscia allungata. In quest'ultimo caso, l'ombra ha una forma ovale. Quando il rotore gira dalla posizione b. alla posizione a.. l'ovale diventa più stretto fino a che non si trasforma in una striscia stretta. Nei nostri calcoli successivi del periodo durante il quale l'ombra copre un posto particolare, partiamo sempre dal caso a. Tre fattori sono importanti per l'eventuale impedimento causato dalla ombra:

- 1) Il luogo coperto dall'ombra;
- 2) Il momento in cui l'ombra copre un posto particolare;
- 3) La durata della ombra che copre un particolare luogo.).

«It is obvious from these figures that particularly large areas in E-NE and W-NW directions from the wind turbine can be shadowed for long periods of time. In these directions, therefore, most hindrance is to be expected.» (Page 358) (Trad.: È evidente da questi dati che in modo particolare grandi aree nelle direzioni

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 27</p>
---------------------------------------	--	----------------

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

Est Nord-Est e Ovest Nord-Ovest dalla turbina eolica possono essere ombreggiate per lunghi periodi di tempo. In queste direzioni, di conseguenza, un maggior impedimento è prevedibile.").

«From the above it can be concluded that the revolving blades of present wind turbines may inflict shadow hindrance on a number of people in a large area around the turbine, particularly if the flicker frequency is beyond 2.5 Hz. Largely because of the development of wind turbines running with variable rpm (turbines with a so-called inverter system), the number of turbines whose flicker frequency may rise above this limit of 2.5 Hz is bound to increase. (...). It must be noted, though, that this limit was found in literature which did not refer to the shadow of wind turbine blades. Therefore, further research is necessary. This will have to go into both the impact of the resulting flicker frequency and the duration of the exposure. For the present it seems to be advisable only to install wind turbines whose resulting flicker frequency remains below 2.5 Hz. Shadow hindrance may occur particularly in east-northeast and west-northwest directions from a wind turbine. In order to reduce shadow hindrance in buildings to a minimum, this could be taken into account when siting new wind turbines. With southwest winds predominating in the Netherlands, wind turbines are often sited southwest of built-up areas. These locations, however, are most likely to suffer shadow hindrance. Siting south of buildings would therefore be a fine compromise. For numerous reasons wind turbines may still be so sited that shadow hindrance is caused in buildings. In such cases several solutions could be considered to reduce the shadow hindrance:

- a) *Fitting the buildings' windows with sunblinds. This could lessen the difference in intensity between light and shadow.*
- b) *Stopping the wind turbine. Whenever the shadow of a wind turbine causes nuisance, it could be stopped. Because one knows at what times shadow hindrance can be expected in a certain situation, the wind turbine could be stopped with a time switch. From exploratory calculations we have found that the annual output of wind turbines in areas of low building intensity would be reduced by a few percent only.» (Page 358)*

(Trad.: Da quanto detto sopra, si può concludere che le pale rotanti delle attuali turbine eoliche possono infliggere problemi dovuti all'ombra su un numero di persone in una vasta area attorno alla turbina, in particolare se la frequenza di sfarfallio è oltre i 2,5 Hz. In gran parte a causa dello sviluppo di turbine eoliche in esecuzione con un numero di giri variabile (turbine con un cosiddetto sistema inverter), il numero di turbine la cui frequenza di flicker può superare questo limite di 2,5 Hz è destinato ad aumentare. (...) Si deve notare, tuttavia, che questo limite trovato in letteratura non si riferisce all'ombra delle pale eoliche. Pertanto, sono necessarie ulteriori ricerche. In ciò dovrà entrare sia l'impatto della frequenza di sfarfallio risultante che la durata dell'esposizione. Per il momento sembra essere consigliato solo per l'installazione di turbine

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

eoliche la cui risultante frequenza di sfarfallio rimane al di sotto di 2,5 Hz. Il problema dell'ombreggiamento può verificarsi in particolare nelle direzioni a Nord Nord-Est e a Ovest Nord-Ovest da una turbina eolica. Al fine di ridurre al minimo il problema dell'ombreggiamento negli edifici, ciò potrebbe essere preso in considerazione quando si procede alla localizzazione di nuove turbine eoliche. Con venti predominanti da Sud-Ovest nei Paesi Bassi, le turbine eoliche sono spesso situate a Sud-Ovest dei centri abitati. Queste posizioni, tuttavia, hanno una maggiore probabilità di soffrire del problema dell'ombreggiamento. L'ubicazione a Sud di edifici sarebbe quindi un buon compromesso.

Per numerose ragioni, le turbine eoliche possono ancora risultare localizzate in modo tale che il problema dell'ombreggiamento si verifichi, comunque, negli edifici; in tali casi, diverse soluzioni possono essere considerate per ridurre il problema dell'ombreggiamento come il **montaggio nelle costruzioni di finestre con tende da sole. Questo potrebbe ridurre la differenza di intensità tra luce e ombra** (Clarke AD. A case of shadow flicker/flash: assessment and solution. Techno Policy Group, Open University, Milton Keynes, UK (1991)

«A recommendation was made that turbines should be sited at least ten diameters distance from habitations, and more if sited to the East / Southeast or West / Southwest, and the shadow path identified.» (Page 93) (Trad.: Una raccomandazione è che le turbine devono essere situate ad almeno dieci diametri rotore di distanza dalle abitazioni, e più se situati ad Est Sud-Est o Ovest Sud-Ovest, e il percorso di ombra identificata.).

«The effect can be pronounced in rooms in buildings facing the turbine, especially if the window is the sole source of light for a room.» (Page 93) (Trad.: L'effetto può essere pronunciato in camere di edifici prospicienti la turbina, particolarmente se la finestra è l'unica fonte di luce per una stanza.).

«It has been found that the frequencies of flicker that produce disturbance are between 2.5 Hz and 40 Hz.» (Page 93) (Trad.: È stato trovato che le frequenze di sfarfallio che producono disturbi sono comprese tra 2,5 Hz e 40 Hz.).

«Most medium and large wind turbines have a rotation rate of between 30 r/min [rotations per minute] and 60 r/min, and smaller turbines often have a faster rotation. Most turbines in use today are two or three bladed, constant speed types, producing shadow flicker rates in the range of 1-3 Hz. Variable speed turbines

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 29</p>
---------------------------------------	--	----------------

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

may produce a 2-6 Hz flicker rate. Therefore the shadow flicker from turbines has frequencies that could in the right conditions produce light flicker effects to susceptible persons.» (Page 93) (Trad.: La maggior parte delle turbine eoliche di medie e grandi dimensioni hanno una velocità di rotazione compresa tra 30 giri/min [giri al minuto] e 60 giri/min, e turbine più piccole spesso hanno una rotazione più veloce. La maggior parte delle turbine in uso oggi sono a due o tre pale, tipi a velocità costante, producendo tassi di shadow flicker nell'intervallo 1-3 Hz. Le turbine a velocità variabile possono produrre un tasso di sfarfallio a 2-6 Hz. Pertanto, lo shadow flicker delle turbine ha frequenze che potrebbero, nelle giuste condizioni, produrre effetti di sfarfallio di luce su persone predisposte.).


«The shadow will be most pronounced when the blades of the turbine face the building and present the largest shadow area.» (Page 94) (Trad.: L'ombra sarà più pronunciata quando le pale della turbina affrontano l'edificio e presentano la più grande area ombreggiata.).

«The minimum separation distance for wind turbines from habitations should be approximately 10 blade diameters. This is emerging from experience and research as a standard guideline, in order to reduce problems of visual impact, noise, shadow disturbance, and safety.» (Page 95) (Trad.: La distanza minima per le turbine eoliche dalle abitazioni dovrebbe essere di circa 10 diametri delle pale. Questo sta emergendo dall'esperienza e dalla ricerca come una linea guida standard, al fine di ridurre i problemi di impatto visivo, il rumore, disturbo da ombreggiamento o e di sicurezza.).

In accordo con la consolidata letteratura di settore, **si ritiene opportuno adottare una soglia massima di 100 ore/anno di Shadow Flicker sui ricettori, individuati entro un'opportuna Area d'indagine nell'intorno dell'impianto, inteso come limite massimo da non superarsi.**

Si rammenta che **tale valore di esposizione non ha alcun effetto prescrittivo ai fini della presente valutazione del fenomeno dello Shadow Flicker**, che invece trova da molti anni una consolidata esperienza di studio e di ricerca soprattutto nei paesi dell'Europa settentrionale; **tale valore di soglia costituisce un valore di riferimento di natura prettamente letteraria. non esistendo a oggi riferimenti normativi cogenti nell'ambito della giurisprudenza italiana in merito al fenomeno dello Shadow Flicker che dettino un valore di riferimento prescrittivo. e assume dunque il mero significato di "Best practice" progettuale**, da adottare ai fini di un inserimento armonioso dell'impianto eolico nel contesto paesaggistico e territoriale locale, compatibilmente con i cambiamenti propri dell'assetto del sistema della stratificazione urbanistica e culturale e con le esigenze e l'evoluzione storico-sociale del tessuto antropico.

In accordo con quanto previsto dalle Linee Guida Standard della maggior parte dei paesi del Mondo che ha studiato il fenomeno, nella presente relazione **l'analisi dello Shadow Flicker è stata condotta computando una distanza massima di calcolo pari a 10 volte il diametro rotore del modello di turbina eolica assunto per il proposto impianto di progetto.**

<p>pag. 30</p>	<p> Studio di Ingegneria Michele R.G. Curtotti</p>	<p>PROGETTISTA: Ing. Michele R.G. Curtotti</p> <p>Viale II Giugno, 385 71016 San Severo (FG) - ITALY</p>
----------------	--	---

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

1.4	MODELLO DI TURBINA EOLICA
------------	----------------------------------

Si rammenta che per i n° 5 (cinque) aerogeneratori (WTG) dell'impianto di progetto sarà impiegato il modello di turbina eolica impiegato è costituito da una torre di sostegno tubolare metallica a tronco di cono sulla cui sommità è installata la navicella, il cui asse è a **125 m dal piano campagna (Hub height)**, con annesso il rotore di diametro pari a **162 m (Rotor diameter)** (lunghezza pala 81,0 m), **per un'altezza massima complessiva del sistema torre-pala (Hub height+1/2 Rotor diameter) di 206 m s.l.t..**

In accordo con le indicazioni fornite da un'ormai consolidata letteratura di settore (*vedi Paragrafo 1.4., Capitolo 1., della presente Relazione Tecnica*), nelle simulazioni condotte mediante software WindPro, per valutare il potenziale fenomeno dello Shadow Flicker generato dall'impianto di progetto, **si è assunta l'ipotesi "del caso peggiore" ("Worst Case Scenario") che ipotizza una distanza massima di valutazione del fenomeno dello Shadow Flicker pari a 10 volte il diametro rotore di progetto.**

Per tale motivo, si è assunta un'Area d'indagine dello Shadow Flicker pari a 1.620 m; ovvero, un'area ottenuta dall'involuppo delle aree buffer circolari di 1.620 m di raggio (pari a 10 volte il diametro rotore del modello di turbina eolica, centrate nei n. 5 (cinque) aerogeneratori di progetto.

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 31</p>
---------------------------------------	--	----------------

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

1.5 INDAGINE E LOCALIZZAZIONE DEI *POTENZIALI* RICETTORI SENSIBILI

Compatibilmente con il livello di dettaglio richiesto per l'analisi dei *potenziali* Ricettori sensibili allo Shadow Flicker prodotto dall'impianto di progetto, si è proceduto all'indagine e successiva localizzazione su base cartografica di tutti gli elementi antropici ubicati entro l'Area d'indagine dello Shadow Flicker che rispondono alla descrizione di "ricettore".

Per la definizione di "**ricettore**" si è ritenuto opportuno mutuare quella fornita dal p.to 3.1.13 del Par. 3.1 "Termini e definizioni di carattere generale", Cap. 3 "TERMINI E DEFINIZIONI" della UNI/TS 11143-7:2013 "Metodo per la stima dell'impatto e del clima acustico per tipologia di sorgenti - Parte 7: Rumore degli aerogeneratori", ovvero: «**Qualsiasi edificio adibito ad "ambiente abitativo", comprese le relative aree esterne di pertinenza.**»; mentre la definizione di "**ambiente abitativo**" è quella fornita dall'art. 2 "Definizioni", comma 1., lettera b), della Legge 26 ottobre 1995, n. 447 "Legge quadro sull'inquinamento acustico" (*pubblicata su G.U.R.I. n. 254 del 30 ottobre 1995, S.O. n. 125*): «**ambiente abitativo: ogni ambiente interno ad un edificio destinato alla permanenza di persone o di comunità ed utilizzato per le diverse attività umane (...Omissis...)**».

Sulla scorta di tali considerazioni, la metodologia d'indagine adottata è consistita nei seguenti *step* operativi:

- 1) Su base cartografica "Ortofoto" è stata indagata l'Area d'indagine dello Shadow Flicker (ottenuta dall'involuppo delle aree buffer circolari di 1.620 m di raggio (pari a 10 volte il diametro rotore del modello di turbina eolica V162 da 6,2 MW (10x162 m= 1.620 m)), centrate nei n. 12 (dodici) aerogeneratori di progetto).
- 2) All'interno della suddetta Area d'indagine sono stati individuati tutti i *potenziali* Ricettori sensibili allo Shadow Flicker regolarmente accatastati presso il Nuovo Catasto Edilizio Urbano (N.C.E.U) di Campobasso rispondenti alla definizione di "ambiente abitativo".

Con questa modalità operativa, **all'interno dell'Area d'indagine pari a 10 volte il diametro rotore di progetto sono stati individuati complessivamente n. 75 (settantacinque) potenziali Ricettori sensibili allo Shadow Flicker (vedi Allegato n. 1: Mappa ricettori)** le cui coordinate, espresse secondo la proiezione UTM WGS84 - Fuso 33, sono state successivamente riportate su base cartografica IGM (Scala: 1:25.000) in ambiente di lavoro "*Designer*" del software WindPro.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

1.6	SHADOW FLICKER ANALYSIS
------------	--------------------------------

Questa sezione presenta le assunzioni che sono state adottate al fine di valutare il fenomeno dello Shadow Flicker indotto dall'impianto di progetto sull'area d'indagine assunta, e stimarne l'effetto sui ricettori sensibili coinvolti.

A ciascun ricettore è stata assegnata una "dimensione" o "zona di osservazione" ("*Viewing Area*") (tipicamente una singola finestra o un patio è considerata una zona di osservazione): una zona più grande aumenta la durata dello Shadow Flicker previsto; se le finestre sono più piccole o sono orientate un po' fuori dalla linea di mira, allora l'effetto dello Shadow Flicker potrebbe essere ridotto.

La presente analisi dello Shadow Flicker considera l'ipotesi del "Worst Case Scenario", cioè presuppone l'esposizione completa delle cosiddette "zone di osservazione" dei ricettori al fenomeno dell'ombreggiamento indotto; ovvero, nello studio si è assunto che non esista alcun genere di ostacoli che possano schermare (parzialmente o totalmente) il fenomeno, quali ad esempio alberature, edifici, ecc., localizzati lungo la linea di mira tra le "zone di osservazione" dei potenziali ricettori sensibili e i n. 12 (dodici) aerogeneratori di progetto, ad eccezione dell'orografia dell'area.

Tutte le moderne turbine eoliche sono a controllo d'imbardata, cioè il piano del rotore si orienta nel senso del vento predominante; di conseguenza, a volte il piano del rotore della turbina sarà girato di un angolo tale che l'effetto dello Shadow Flicker a una posizione particolare sarà minimizzato.

Tenendo presente che gli edifici individuati come ricettori possono essere localizzati entro l'areale in cui lo Shadow Flicker costituisce effettivamente un problema rilevante, è necessario eseguire un'indagine completa delle dimore rappresentative (comprese le posizioni e l'orientamento delle finestre, la posizione degli alberi che creano ombra, ecc.); inoltre per ogni dimora si deve supporre di operare nell'ipotesi di "Caso peggiore" ("*Worst Case Scenario*"), cioè:

- La presenza di tutte le finestre e/o lucernai identificabili come "ricettori sensibili" per tutti i layout dei fabbricati, individuate attraverso le ricognizioni fotografiche eseguite *in situ*;
- Ogni "apertura" è assunta orientata in direzione ortogonale alla turbina (angolo d'inclinazione verticale= 0°);
- Ogni "apertura" dovrebbe conservare le proprie dimensioni reali in termini di larghezza, lunghezza e altezza rispetto al suolo (la letteratura di settore, invece, considera già cautelative delle dimensioni di 1,00 m x 1,00 m per ciascuna "apertura");
- Nel caso di più finestre disposte su uno stesso piano si ipotizza la presenza di un'unica "apertura", di altezza massima pari a quella della finestra più alta e di lunghezza pari alla somma delle lunghezze delle singole finestre;
- Le "aperture" sono prive di tapparelle o tende che possano oscurare anche solo parzialmente la luce solare intermittente;

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

- Non si considera la presenza di alberi, edifici o altri elementi che possano limitare, parzialmente o totalmente, il fenomeno dello Shadow Flicker sul ricettore.

Le simulazioni condotte mediante software WindPro sono state condotte considerando l'ipotesi semplificativa (ma già abbondantemente cautelativa) per la quale tutti i ricettori sono dotati di quattro "aperture" dalle dimensioni di 1,00 m x 1,00 m, per un'altezza rispetto al suolo di 2,00 m (per una "apertura" posta al piano terra e un'altezza misurata rispetto al centro della stessa), disposte sui quattro lati edificio (direzioni pari a: 0°, 90°, 180° e 270° rispetto al Nord geografico), per cui ciascun ricettore si è supposto essere dotato di finestre su ogni lato dell'edificio ("Worst Case Scenario").

È importante inoltre specificare che per questo tipo di analisi si considera generalmente un'unica tipologia di *potenziali* Ricettori sensibili al fenomeno dello Shadow Flicker, ovvero ricettori "puntuali" localizzati nelle vicinanze dell'area d'impianto.

I ricettori "locali" sono invece rappresentati da agglomerati antropici (comuni, frazioni, borghi, ecc.) limitrofi al sito d'interesse, generalmente schematizzati come un unico ricettore localizzato in corrispondenza del punto del perimetro dell'agglomerato urbano più vicino all'area d'impianto.

In accordo con le Misure di mitigazione proposte alla lettera b): **«minima distanza di ciascun aerogeneratore dai centri abitati individuati dagli strumenti urbanistici vigenti non inferiore a 6 volte l'altezza massima dell'aerogeneratore»** del Paragrafo 5.3. "Misure di mitigazione", Capitolo 5. "GEOMORFOLOGIA E TERRITORIO" dell'Allegato 4 (punti 14.9, 16.3 e 16.5) "Impianti eolici: elementi per il corretto inserimento nel paesaggio e sul territorio" al D.M. 10 settembre 2010 "Linee guida per l'autorizzazione degli impianti alimentati da fonti rinnovabili. (10A11230)", **i n. 5 (cinque) aerogeneratori dell'impianto di progetto distano da ciascun centro abitato più di 6 volte l'altezza massima del modello di turbina eolica impiegato ai fini dei calcoli.**

La distanza rilevante dei centri abitati dal sito d'interesse è tale da non giustificare per essi un'analisi dello Shadow Flicker, poiché sicuramente **il fenomeno dello Shadow Flicker non avrà alcun effetto sui centri abitati.**

Il potenziale fenomeno dello Shadow Flicker è stato dunque stimato esclusivamente con riferimento all'effetto indotto dai n. 5 (cinque) aerogeneratori di progetto sui *potenziali* Ricettori sensibili "puntuali" individuati entro l'Area d'indagine dello Shadow Flicker di 1.620 m.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

1.7	STIMA DEGLI IMPATTI
------------	----------------------------

1.7.1	FASE DI COSTRUZIONE e DI ESERCIZIO
--------------	---

Il fenomeno dello Shadow Flicker indotto dai n. 5 (cinque) aerogeneratori dell'impianto di progetto sui n. 75 (settantacinque) potenziali ricettori sensibili complessivamente individuati entro l'Area d'indagine ottenuta dall'involuppo delle aree buffer circolari di 1.620 m di raggio (pari a 10 volte il diametro rotore del modello di turbina eolica V162 da 6,2 MW (10x162 m= 1.620 m)) centrate nei n. 5 (cinque) aerogeneratori di progetto sarà dovuto alla proiezione delle ombre mobili generate dalle pale in movimento; pertanto, il potenziale fenomeno dello Shadow Flicker indotto dagli aerogeneratori di progetto si potrà manifestare esclusivamente durante la fase di esercizio dell'impianto.

Dall'analisi della "Calculation Results" del software WindPro (*vedi Tabulazioni successive*) si evince che dei *potenziali* ricettori sensibili individuati entro l'Area d'indagine dello Shadow Flicker di 1.620 m di raggio, **nessuno è potenzialmente interessato dal fenomeno dello Shadow Flicker indotto dai n. 5 (cinque) aerogeneratori dell'impianto di progetto, poiché mai esposti allo Shadow Flicker per un numero di ore annue superiori al "Valore limite" delle 100 ore/anno.**

Lo Shadow Flicker rappresenta un fenomeno potenzialmente fastidioso se inatteso o se i soggetti che abitano nelle dimore poste nelle vicinanze degli aerogeneratori dell'impianto di progetto non siano stati adeguatamente informati.

Il proponente è ben consapevole di quando potrà potenzialmente accadere il fenomeno dello Shadow Flicker indotto dai n° 5 (cinque) aerogeneratori dell'impianto di progetto "RS3 MONAC".

È doveroso ricordare che i calcoli fin qui condotti con il software WindPro non hanno tenuto conto della presenza di "zone di esclusione" naturali o artificiali che hanno la facoltà di inibire (parzialmente o totalmente) il fenomeno dello Shadow Flicker sui Ricettori individuati (es.: presenza di alberature, tendaggi, infissi, ecc.), poiché il calcolo si è basato esclusivamente sui dati di orografia e geografici del sito in esame.

Inoltre, si rammenta che lo Shadow Flicker è atteso verificarsi solo nelle giornate in cui il Sole non è oscurato da nuvole, in caso contrario il fenomeno non avrà luogo (*Real Case scenario*).

Infine, si rammenta che il "Valore limite" di 100 ore/anno costituisce un valore di riferimento di natura squisitamente letteraria, non esistendo a oggi alcuna normativa comunitaria o nazionale in materia di Shadow Flicker che detti un valore limite prescrittivo.

Per il sito in esame non è atteso nessun impatto ambientale a lungo termine risultante dallo Shadow Flicker.

pag. 35	 Studio di Ingegneria Michele R.G. Curtotti	PROGETTISTA: Ing. Michele R.G. Curtotti Viale II Giugno, 385 71016 San Severo (FG) - ITALY
---------	--	---

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

1.8 SHADOW FLICKER E SALUTE PUBBLICA: IL FENOMENO DELL'EPILESSIA FOTOSENSIBILE (PSE)

Le turbine eoliche sono note per generare il fenomeno dello Shadow Flicker attraverso l'interruzione della luce solare prodotta dalle pale della turbina. I parametri noti dell'epilessia generata dall'effetto del Flicker, cioè contrasto, frequenza, rapporto *mark-space*, zona retinica stimolata e percentuale di corteccia visiva coinvolta si sono applicati alle caratteristiche delle turbine. La percentuale di pazienti influenzati dalla visione delle turbine eoliche, espressa come distanza in multipli dell'altezza dell'hub della turbina, ha mostrato che il rischio di crisi non diminuisce significativamente fino a che la distanza non supera 100 volte l'altezza del mozzo.

Poiché il rischio non diminuisce con la distanza di osservazione, la frequenza istantanea è quindi il fattore critico e dovrebbe essere mantenuta a un massimo di tre al secondo, cioè, 60 RPM per una turbina tripala. Sulle wind farm le ombre proiettate da una turbina su un'altra non dovrebbero essere osservabili dal pubblico se il tasso istantaneo cumulativo supera tre al secondo. Le pale della turbina non dovrebbero essere riflettenti.

Il fenomeno dell'Epilessia Fotosensibile (PSE) si verifica in un soggetto della popolazione su 4.000 [Harding & Jeavons, 1994]. L'incidenza è di 1:1 per 100.000 soggetti all'anno. Fra i 7 e i 19 anni di età l'incidenza è più di cinque volte maggiore [Fish *et alii*, 1993]. La Fotosensibilità persiste nel 75% dei pazienti [Harding *et alii*, 1997]; su 454 pazienti Harding e Jeavons (1994) hanno individuato 33 casi in cui le crisi epilettiche erano state indotte dal fenomeno del tremolio della luce del Sole.²⁹

Secondo il PPS22 (Planning Policy Statement): «Circa lo 0,5% della popolazione britannica è epilettico e di questi circa il 5% sono foto-sensibili. Tra coloro che sono affetti da epilessia fotosensibile, meno del 5,0% sono sensibili alle frequenze più basse di 2,5-3,0 Hz, il resto è sensibile soltanto alle frequenze più alte. L'intermittenza causata dalle turbine eoliche è uguale alla frequenza di passaggio delle pale. Un rapido movimento di una macchina a tre pale darà luogo ai più alti livelli di frequenza di sfarfallio. Questi livelli sono ben al di sotto dei 2 Hz. La nuova generazione di turbine eoliche è nota per operare a livelli inferiori a 1 Hz.».

²⁹ Fonti:

1. Wind turbines, Flicker, and photosensitive epilepsy: Characterizing the flashing that may precipitate seizures and optimizing guidelines to prevent them, G. Harding, P. Harding – Neurosciences Institute Aston University, Birmingham, United Kingdom, and A. Wilkins – Department of Psychology, University of Essex, Colchester, United Kingdom – *Epilepsia*, 49(6):1095–1098 (2008);
2. Triggering mechanisms in epilepsy. The electroclinical point of view, H. Gastaut, CA. Tassinari (1966) – *Epilepsia* 7:85–138;
3. Photosensitive epilepsy, GFA Harding, PM. Jeavons PM. – *MacKeith Press*, London (1994);
4. Persistence of photosensitivity, GFA Harding, A. Edson, PM Jeavons – *Epilepsia* 38:663–669 (1997);
5. Shadow hindrance by wind turbines, E. Verkuijlen, CA. Westra (1984) *Proceedings of the European wind Energy Conference*. October (1984) Hamburg, Germany.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

L'effetto dello Shadow Flicker è noto verificarsi entro una distanza dagli edifici, secondo Clarke, compresa entro dieci diametri del rotore di una turbina nelle direzioni da Sud-Ovest fino a Nord, a Sud-Est. Clarke conclude che la frequenza del Flicker delle pale della turbina (<1 Hz) è fuori dal range di frequenze (da 2.5 a 20 Hz), che interessa l'epilessia.

Se ciò dovesse accadere il fenomeno dello Shadow Flicker sarebbe maggiormente notato dalle abitazioni distanti, secondo Clarke, all'interno della distanza di dieci volte il Diametro Rotore di una turbina in direzione da Sud-Ovest attraverso il Nord a Sud-Est. Clarke ha concluso che la frequenza di Flicker delle pale (inferiore a 1 Hz) è al di fuori del range (2,5-20 Hz), che colpisce gli epilettici. Ulteriori informazioni sull'effetto Shadow Flicker possono essere ottenute dal sito web del Danish Wind Industry Association (www.windpower.org/en/tour/env/shadow/index.htm).³⁰

Le turbine eoliche di grandi dimensioni girano solitamente fra i 30 e i 60 giri al minuto (RPM). Molte turbine sono a Rotore tripala ed operano ad una velocità costante e a 60 RPM producono *Flicker* ad una Frequenza di 3 Hz; ciò anche per alcuni tipi di turbine a due pale. Le turbine che girano più velocemente o che hanno più pale produrranno *Flicker* a frequenze tali per cui le probabilità che si verificino attacchi di epilessia sono così alte da essere inaccettabili.

Alcune turbine eoliche sono caratterizzate da range di velocità variabili più piccoli, compresi tra i 30 e i 300 giri/min. [Verkuijlen & Westra, 1984] ed alcune hanno più di tre pale, così il Flicker da loro prodotto è contenuto nel range per cui gli attacchi epilettici sono probabili.

Quando diverse turbine sono allineate con l'ombra del Sole, il Flicker si verifica da una combinazione delle pale delle diverse turbine, che possono avere una frequenza più alta di quella di una singola turbina.

Se le pale di una turbina sono riflettenti, allora esiste la possibilità di *Flicker* dalla luce riflessa in posizioni di osservazione che non sono influenzate dalle ombre.

L'esposizione alla luce intermittente da una turbina è determinata dall'altezza del mozzo e dal diametro delle pale, dall'altezza del Sole e dalla direzione delle pale relative al punto di osservazione.

Queste variabili sono influenzate dalle ore della giornata, dal periodo dell'anno, dalla direzione del vento e dalla posizione geografica [Verkuijlen & Westra, 1984]. Le ombre possono essere proiettate sulle finestre degli edifici vicini, influenzando l'illuminazione interna e dando luogo al fenomeno del Flicker che non può essere evitato dagli occupanti. Verkuijlen & Westra hanno determinato le tracce dell'ombra o *shadowtracks* delle turbine e il loro effetto rispetto all'altezza del mozzo del Rotore. Essi hanno supposto che il diametro del Rotore fosse il 75% dell'altezza del mozzo, ma molte turbine si scostano da questo rapporto.

Per evitare i problemi dello Shadow Flicker, Verkuijlen e Westra hanno proposto che le turbine dovrebbero essere installate soltanto se la frequenza della intermittenza della luce rimanesse al di sotto dei

³⁰ Fonte: Report Tewel368 Baydon Meadow Shadow Flicker Assesment, Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng The Energy Workshop Ltd 25 Queen's Square Business Park Huddersfield Road Honley HD9 6QZ, May 12th, 2006.

PROPONENTE: RINNOVABILISUD TRE		pag. 37
---------------------------------------	--	---------

2.5 Hz in tutte le condizioni e che le turbine dovrebbero essere collocate laddove le abitazioni non siano posizionate ad Est Nord-Est o ad Ovest Nord-Ovest rispetto alle turbine (raccomandazioni del Northern Hemisphere). Due esempi di convulsioni indotte da turbine eoliche su piccoli parchi eolici in Gran Bretagna sono stati segnalati per gli autori nel 2007.

Le convulsioni provocate dall'effetto *Flicker* dipendono dalla media oraria dell'illuminazione dello sfarfallio (*Flicker*), dal contrasto e dalla frequenza, dalla frazione mark-space e dalla zona della retina stimolata e sono ben descritte in **Figura 1.12.-1.**

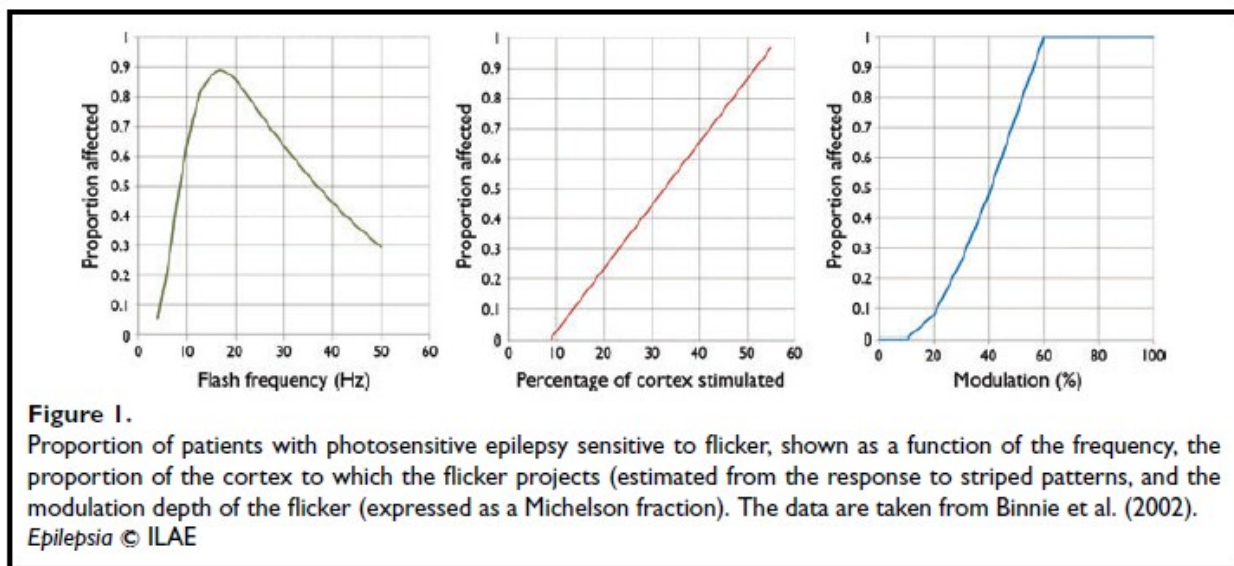


Figura 1.12.-1.: Proporzione di pazienti affetti da Epilessia Fotosensibile sensibile al *Flicker*, indicata in funzione della frequenza, la proporzione della corteccia cerebrale interessata dal *Flicker* (valutata dalla risposta ai modelli a strisce e dalla profondità di modulazione del *Flicker* (espressa come frazione di Michelson). I dati sono ricavati da Binnie et al. (2002) (*Epilepsia*® ILAE).

L'area della retina stimolata dal fenomeno del Flicker prodotto da una turbina eolica, ci si potrebbe aspettare che dipenda dall'area dei rotori che sottendono l'occhio. Tuttavia, se i rotori interrompono la luce diretta del Sole proiettando un'ombra sull'osservatore, allora la luminosità dell'effetto è probabile che sia tale da diffondere sufficiente luce all'interno dell'occhio stimolando l'intera retina con luce intermittente. Se gli occhi sono chiusi, la luce si diffonde alle palpebre e la luce intermittente raggiunge la retina all'interno.

Il rapporto di contrasto di luminosità del Flicker dipende dalla misura in cui le pale occludono il Sole; dato che il Sole sottende circa 0,5°, esso è completamente occluso soltanto quando le pale sottendono più di 0,5° all'occhio, ignorando il segnale luminoso. Quando l'osservatore si trova ad una distanza in cui le pale

<p>RINNOVABILISUD TRE</p>	<p>WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p>SETTEMBRE 2023</p>
-------------------------------	---	---------------------------

sottendono meno di 0,5° il Sole, il contrasto del fenomeno è ridotto. Il *Flicker* cessa di essere dannoso per contrasti di luminosità minori di circa il 10%. (vedi Figura 1.12.-1).³¹

Assumendo che contrasti inferiori al 10% si verificano quando la larghezza della pala della turbina sottende all'occhio un angolo che è il 10% del diametro del Sole (0,05°), è possibile fissare un limite per la distanza alla quale lo Shadow Flicker è probabile provochi fenomeni di attacchi epilettici. Per una pala di una turbina di 1,00 m di larghezza, questa distanza è 1,14 km. La maggior parte delle ombre sono probabilmente di un sufficiente contrasto per essere dannose. Potrebbe essere insufficiente limitare l'ubicazione delle turbine a una distanza pari a 10 volte il diametro Rotore dalle abitazioni (Clarke).

Nei laboratori EEG, l'attività epilettiforme EEG è indotta su individui fotosensibili attraverso una lampadina a luminescenza a gas di xeno, fornendo una serie di flash molto brevi, cioè, studi di laboratorio non hanno indagato l'effetto di molti brevi periodi diversamente in un ambiente molto luminoso (come potrebbe accadere con il Rotore di un aerogeneratore).

Tuttavia, nel caso di un attacco indotto dalle pale di un elicottero, segnalato da Cushman e da Floccare (2007), il periodo scuro dello Shadow Flicker avveniva fra le 24 e le 27 volte al secondo. Le pale dell'elicottero sono solitamente più strette di quelle delle turbine e provvederebbero ad un intervallo scuro più breve, che potrebbe essere preveduto per essere meno provocatorio di quello generato dalla pala di una turbina eolica.

Il lampeggiamento (Flashing) può verificarsi per mezzo della riflessione della luce solare sulla superficie lucida delle pale [Clarke]. È probabile che le pale causino il *Flicker* solo se la quantità di Sole riflessa verso un osservatore varia con la rotazione delle pale.

Data la forma delle pale, tale variazione è probabile. Queste considerazioni introducono la possibilità di una zona pericolosa diversa da quella fornita dall'ombra proiettata dalle pale. Nel caso di luce solare riflessa, il Flicker può essere meno luminoso di quello proiettato da un'ombra e la luce diffusa all'interno dell'occhio può essere insufficiente a causare un problema.

Se così è, l'efficacia dello stimolo dipenderà dall'angolo di visuale sotteso dal Rotore verso l'occhio dell'osservatore. Questo angolo di visuale sarà direttamente proporzionale alla lunghezza del Rotore (raggio) ed alla distanza dalla quale l'osservatore sta osservando il Rotore.

L'angolo di visuale sotteso dalla luce intermittente determina la probabilità delle convulsioni. Dagli studi di Binnie *et alii* (2002) o Wilkins *et alii* (2005) è evidente che il rischio di attacchi è in proporzione diretta con la zona della corteccia visiva stimolata, si veda la Figura 2.2. Per questo motivo, il Flicker che è diretto al

³¹ Fonte: Wind turbines, Flicker, and photosensitive epilepsy: Characterizing the flashing that may precipitate seizures and optimizing guidelines to prevent them, G. Harding, P. Harding – Neurosciences Institute Aston University, Birmingham, United Kingdom, and A. Wilkins – Department of Psychology, University of Essex, Colchester, United Kingdom – *Epilepsia*, 49(6):1095–1098 (2008).

<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 39</p>
---------------------------------------	--	----------------

centro del campo visivo è più dannoso del Flicker proiettato nella periferia visiva. (i 10 gradi centrali di visione forniscono il 90% dell'output neurale dalla retina al cervello).

Si supponga che una turbina, con le pale che siano il 75% dell'altezza del mozzo, sia osservata da una certa distanza (vedi **Figura 1.12.-2.**).

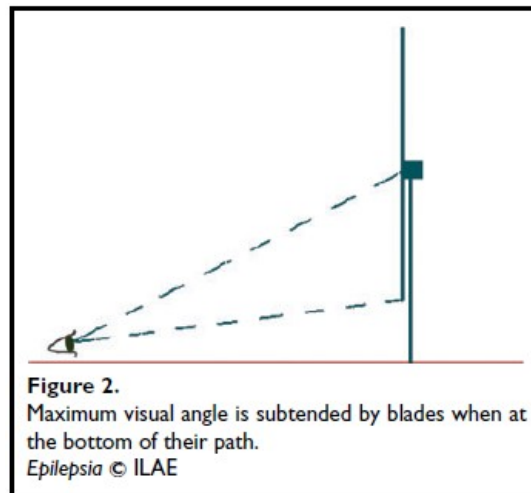


Figura 1.12.-2: L'angolo visivo massimo è sotteso dalle pale quando sono al termine del loro percorso (Fonte: Epilepsia® ILAE).

La luce solare non sarà mai riflessa simultaneamente da più di una pala, dato che l'angolo delle pale rispetto al Sole sarà raramente simile. Supporremo che le pale sono di larghezza uniforme uguale al 10% della loro lunghezza (radiale). L'angolo all'occhio di un osservatore sotteso da qualsiasi pala è massimo quando la pala è in fondo al suo percorso. Assumendo che lo sguardo è centrato a metà percorso della pala, può essere calcolata la zona corrispondente della corteccia visiva stimolata [Drasdo, 1977]. La parte di corteccia visiva (P) quale stimolo circolare fissato centralmente, raggio angolare A, la proiezione è: $P=1-e^{-0.0574A}$.

Applicando questa formula ai segmenti angolari della superficie del rotore centralmente fissata, la zona della corteccia alla quale il Rotore proietta può essere calcolata e la percentuale di pazienti a rischio di attacchi epilettici può essere valutata, usando la relazione fra la proporzione di area influenzata e area stimolata della corteccia (vedi **Figura 1.12.-1.**). La percentuale di pazienti soggetti a crisi epilettiche fotosensibili alla luce riflessa da una pala di una turbina è mostrata come una funzione della distanza di visione (espressa come un fattore dell'altezza del mozzo) (vedi **Figura 1.12.-3.**).

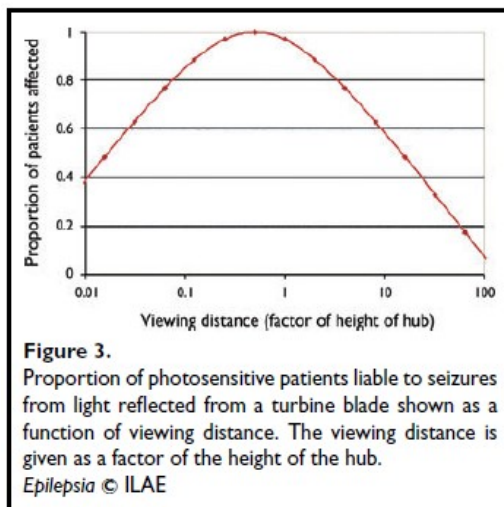


Figura 1.12-3.: La percentuale di pazienti fotosensibili esposti al rischio di attacchi epilettici da luce riflessa da una pala di turbina, indicata in funzione della distanza di osservazione. La distanza di osservazione è fornita come un fattore dell'altezza del mozzo (Fonte: Epilepsia® ILAE).

Si noti che il rischio di attacchi non diminuisce apprezzabilmente fino a quando la distanza di osservazione supera 100 volte l'altezza del mozzo, una distanza tipicamente maggiore ai 4,00 km. Le analisi di cui sopra indicano che il *Flicker* generato dalle turbine eoliche è potenzialmente un problema a distanze di osservazione considerevoli. Oltre 1,00 Km, il 25% della luce dovrebbe essere attenuata dall'atmosfera [Curcio *et alii*, 1953]. Tale attenuazione dovrebbe ridurre il rischio da una simile proporzione [Binnie *et alii*, 2003].

Nelle recenti "Linee guida per la valutazione della compatibilità ambientale – paesaggistica Impianti di produzione ad energia eolica" pubblicate da ARPA Puglia e risalenti a Maggio 2013, in merito ai rischi sulla Salute pubblica connessi alla realizzazione degli impianti eolici, si rammenta che: «(...Omissis...) In un rapporto preliminare presentato ad un Congresso londinese, Nissenbaum *et al.* hanno evidenziato una maggiore prevalenza di disturbi del sonno e di disturbi cognitivi nei residenti in un raggio di 1,5 Km da una pala eolica in confronto con i residenti a più di 3 km di distanza.

Sia lo studio della Pierpont che di Nissenbaum sono però affetti da bias di selezione e/o da una ridotta potenza per il basso numero di soggetti studiati, si basano su sintomatologia soggettiva autoriferita dai partecipanti e non hanno mai subito una procedura di peer review.

I principali studi epidemiologici condotti con metodo scientifico non confermano l'esistenza di un vero e proprio rischio sanitario delle popolazioni esposte allo Shadow Flicker. Sono riconosciuti effetti quali disturbi del sonno e generici fastidi per esposizioni a rumori a bassa frequenza,

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	-------------------

soprattutto negli ambienti rurali e poco antropizzati, ma sembrerebbero legati a fenomeni di percezione del rischio in aree che, in assenza delle pale stesse, sarebbero caratterizzate da prevalente quiete acustica o comunque da bassa intensità di rumore di mascheramento.

Nel gennaio 2012 un panel di esperti indipendenti dei Dipartimenti di Protezione Ambientale e di Sanità Pubblica del Massachusetts ha effettuato una review sistematica degli studi scientifici, invero pochi, disponibili dando la priorità agli studi epidemiologici sugli esseri umani e poi a quelli tossicologici su animali da esperimento. (...Omissis...).

Sebbene molti studi abbiano riscontrato la presenza di una prevalenza di disturbi aspecifici nelle popolazioni residenti in prossimità di aerogeneratori, non sussistono prove epidemiologiche conclusive per escludere che essi siano legati alla percezione del rischio, ovvero alla consapevolezza della presenza degli impianti ritenuti “disturbanti” o genericamente fastidiosi. Il panel conclude per la mancanza di associazione con disturbi mentali e stress psicologico e con disturbi neurovegetativi. Il dato più coerente, sebbene considerato come evidenza “limitata” è quello della maggior prevalenza di disturbi del sonno nella popolazione residente in prossimità di aerogeneratori, e le conseguenze dei disturbi del sonno comprendono disturbi dell’umore, disturbi dell’attenzione e cognitivi e malessere generale. Anche questa eventuale associazione, secondo il panel dovrebbe essere ulteriormente indagata con studi epidemiologici ad hoc. Nel complesso gli autori dello studio concludono per l’insussistenza di prove di effetti nocivi diretti sulla salute del rumore e delle vibrazioni prodotte dalle pale eoliche. **Sarebbero inoltre molto limitati i rischi legati allo sfarfallamento delle onde, in particolare non sussisterebbero rischi epilettogeni.** (...Omissis...)»³².

³² Bibliografia:

- Linee guida per la valutazione della compatibilità ambientale – paesaggistica Impianti di produzione ad energia eolica”, ARPA Puglia; Maggio 2013;
- Health effects and wind turbines: A review of the literature, Knopper L D and Ollson CA. – Environmental Health, 10:78; 2011;
- Adverse health effects of industrial wind turbines: a preliminary report, Nissenbaum M, Aramini J, Hanning C – 10th International Congress on Noise as a Public Health Problem (ICBEN); London, UK; 2011;
- Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection; Massachusetts Department of Public Health;
- Wind Turbine Syndrome. A Report on a Natural Experiment, Pierpont N.; 2009.

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

1.9.	FONTI BIBLIOGRAFICHE
-------------	-----------------------------

Si riporta di seguito l'elenco (non esaustivo) delle principali fonti bibliografiche di riferimento consultate ai fini della redazione della presente Relazione Tecnica specialistica.

1. Danish Wind Industry Association (link: www.windpower.org);
2. American Wind Energy Association (link: www.awea.org);
3. Report for Scituate, MA: Shadow Flicker Analysis C.E. McClelland, M. Knipe – Wind Energy Center University of Massachusetts, Department of Mechanical & Industrial Engineering (link: www.umass.edu/windenergy);
4. Report Tewel368 Baydon Meadow Shadow Flicker assessment Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng – The Energy Workshop Ltd (12.05.2006);
5. Department for Business Enterprise & Regulatory Reform (BERR), UK;
6. www.epilepsy.com/articles/ar_1141663451.html;
7. Danish Wind Industry Association (link: www.windpower.org);
8. Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health; Authors: 1. Jeffrey M. Ellenbogen, MD; MMSc Assistant Professor of Neurology, Harvard Medical School Division Chief, Sleep Medicine, Massachusetts General Hospital; 2. Sheryl Grace, PhD; MS Aerospace & Mechanical Engineering Associate Professor of Mechanical Engineering, Boston University; 3. Wendy J Heiger-Bernays, PhD Associate Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health Chair, Lexington Board of Health; 4. James F. Manwell, PhD Mechanical Engineering; MS Electrical & Computer Engineering; BA Biophysics Professor and Director of the Wind Energy Center, Department of Mechanical & Industrial Engineering University of Massachusetts, Amherst; 5. Dora Anne Mills, MD, MPH, FAAP State Health Officer, Maine 1996–2011 Vice President for Clinical Affairs, University of New England; 6. Kimberly A. Sullivan, PhD Research Assistant Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health; 7. Marc G. Weisskopf, ScD Epidemiology; PhD Neuroscience Associate Professor of Environmental Health and Epidemiology Department of Environmental Health & Epidemiology, Harvard School of Public Health; 8. Facilitative Support provided by Susan L. Santos, PhD, FOCUS GROUP Risk Communication and Environmental Management Consultants;
9. Shadow-Flicker Modeling Authors: Arne Nielsen, Wind Engineers, Inc.. Prepared for Zilkha Renewable Energy, Portland, OR 97204 (Nov. 20, 2003) (link: [http://www.zilkha.com/~/media/Files/ShadowFlickerModeling/ShadowFlickerModeling.pdf](#));

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

http://www.efsec.wa.gov/wildhorse/apl/Exhibits%20PDF/E09_Shadow%20Flicker%20Briefing%20emo.pdf);

10. Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health; Authors: 1. Jeffrey M. Ellenbogen, MD; MMSc Assistant Professor of Neurology, Harvard Medical School Division Chief, Sleep Medicine, Massachusetts General Hospital; 2. Sheryl Grace, PhD; MS Aerospace & Mechanical Engineering Associate Professor of Mechanical Engineering, Boston University; 3. Wendy J Heiger-Bernays, PhD Associate Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health Chair, Lexington Board of Health; 4. James F. Manwell, PhD Mechanical Engineering; MS Electrical & Computer Engineering; BA Biophysics Professor and Director of the Wind Energy Center, Department of Mechanical & Industrial Engineering University of Massachusetts, Amherst; 5. Dora Anne Mills, MD, MPH, FAAP State Health Officer, Maine 1996–2011 Vice President for Clinical Affairs, University of New England; 6. Kimberly A. Sullivan, PhD Research Assistant Professor of Environmental Health, Department of Environmental Health, Boston University School of Public Health; 7. Marc G. Weisskopf, ScD Epidemiology; PhD Neuroscience Associate Professor of Environmental Health and Epidemiology Department of Environmental Health & Epidemiology, Harvard School of Public Health; 8. Facilitative Support provided by Susan L. Santos, PhD, FOCUS GROUP Risk Communication and Environmental Management Consultants;
11. Dorenell Wind Farm Environmental Statement – Infinergy (May 2008);
12. International Review of Policies and Recommendations for Wind Turbine Setbacks from Residences: Setbacks, Noise, Shadow Flicker, and Other Concerns; Minnesota Department of Commerce: Energy Facility Permitting (October 19, 2011); Authors: Kathryn M. B. Haugen;
13. Bundesministerium der Justiz. (2011). Law on protection against harmful environmental effects of air pollution, noise, vibration and similar phenomena (Federal Emission Control Act- BImSchG) (link: <http://www.gesetze-im-internet.de/bimschg/index.html>);
14. Information on identifying and assessing the optical emissions from wind turbines (WEA-shadow-notes), States Committee for Pollution Control (LAI). (2008) (link: <http://www.lung.mv-regierung.de/dateien/wea/schattenwurf/hinweise.pdf>);
15. Information on identifying and assessing the optical emissions from wind turbines (WEA-shadow-notes), States Committee for Pollution Control (LAI). (2008). (link: <http://www.lung.mv-regierung.de/dateien/wea/schattenwurf/hinweise.pdf>);
16. Belästigung durch periodischen schattenwurf von windenergieanlagen, Pohl, J, Faul, F, & Mausfeld, R. (1999). *[Annoyance caused by periodic shadow casting (or shadow flickering) of wind turbines]*

<p style="text-align: center;">RINNOVABILISUD TRE</p>	<p style="text-align: center;">WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER</p>	<p style="text-align: center;">SETTEMBRE 2023</p>
--	---	---

(link:

<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utdredningar/Feldstudie.pdf>);

17. Belästigung durch periodischen schattenwurf von windenergieanlagen: Laborpilotstudie, Pohl, J, Faul, F, & Mausfeld, R. (2000) [Harassment by periodic shadow of wind turbines: Laboratory pilot study]. (link:

<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utdredningar/Laborstudie%20Schattenwurf.pdf>);

18. Belästigung durch periodischen schattenwurf von windenergieanlagen, Pohl, J, Faul, F, & Mausfeld, R. (1999). [*Annoyance caused by periodic shadow casting (or shadow flickering) of wind turbines*]

(link:

<http://cvi.se/uploads/pdf/Kunskapsdatabas%20miljo/Ljud%20och%20Skuggor/Skuggor/Utdredningar/Feldstudie.pdf>);

19. Update of UK Shadow Flicker Evidence Base - Final Report; Drive for The Department of Energy and Climate Change, UK; Authors: Parsons Brinckerhoff, Amber Court, William Armstrong;

20. Report Tewel368 Baydon Meadow Shadow Flicker Assessment, Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng The Energy Workshop Ltd 25 Queen's Square Business Park Huddersfield Road Honley HD9 6QZ, May 12th, 2006 Planning Guidance on Shadow Flicker, Planning Policy Statement 22 (PPS 22);

21. Federal States Committee for Pollution Control, Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windenergieanlagen [–"Information on Identifying and Assessing the Optical Emissions from Wind Turbines], (Germany, 2002) (link: [www.gewerbeaufsicht.niedersachsen.de/...](http://www.gewerbeaufsicht.niedersachsen.de/));

22. CanWEA, "An Introduction to Wind Energy Development in Canada" (2011) (link: www.canwea.ca/pdf/canwea-sitingreport-e.pdf);

23. Verkuijlen E, Westra CA. (1984) Shadow hindrance by wind turbines. *Proceedings of the European wind Energy Conference*. October 1984, Hamburg, Germany;

24. Clarke AD. A case of shadow flicker/flashing: assessment and solution. Techno Policy Group, Open University, Milton Keynes, UK (1991);

25. WindPRO Tutorial;

26. Senvion;

27. Wind turbines, Flicker, and photosensitive epilepsy: Characterizing the flashing that may precipitate seizures and optimizing guidelines to prevent them, G. Harding, P. Harding – Neurosciences

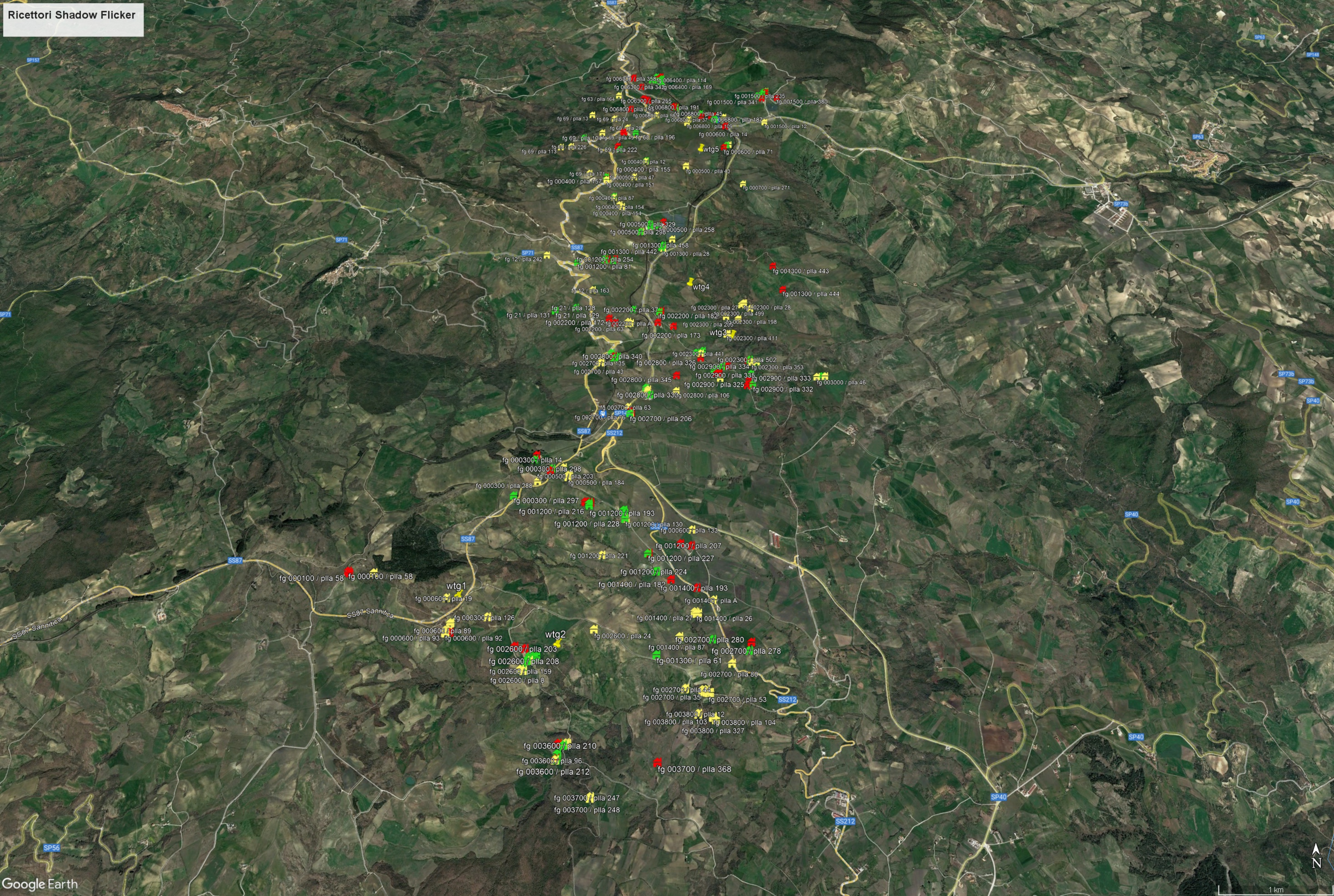
<p>PROPONENTE: RINNOVABILISUD TRE</p>		<p>pag. 45</p>
---------------------------------------	--	----------------

RINNOVABILISUD TRE	WIND FARM RS3 MONAC RELAZIONE SHADOW FLICKER	SETTEMBRE 2023
-------------------------------	---	---------------------------

- Institute Aston University, Birmingham, United Kingdom, and A. Wilkins – Department of Psychology, University of Essex, Colchester, United Kingdom – *Epilepsia*, 49(6):1095–1098 (2008);
28. Triggering mechanisms in epilepsy. The electroclinical point of view, H. Gastaut, CA. Tassinari (1966) – *Epilepsia* 7:85–138;
 29. Photosensitive epilepsy, GFA Harding, PM. Jeavons PM. – *MacKeith Press*, London (1994);
 30. Persistence of photosensitivity, GFA Harding, A. Edson, PM Jeavons – *Epilepsia* 38:663–669 (1997);
 31. Shadow hindrance by wind turbines, E. Verkuijlen, CA. Westra (1984) *Proceedings of the European wind Energy Conference*. October (1984) Hamburg, Germany;
 32. Report Tewel368 Baydon Meadow Shadow Flicker Assesment, Dr P.L. Surman MA, MSc, PhD, C.Sci, C.Chem, C.Eng The Energy Workshop Ltd 25 Queen's Square Business Park Huddersfield Road Honley HD9 6QZ, May 12th, 2006;
 33. Wind turbines, Flicker, and photosensitive epilepsy: Characterizing the flashing that may precipitate seizures and optimizing guidelines to prevent them, G. Harding, P. Harding – Neurosciences Institute Aston University, Birmingham, United Kingdom, and A. Wilkins – Department of Psychology, University of Essex, Colchester, United Kingdom – *Epilepsia*, 49(6):1095–1098 (2008);
 34. Linee guida per la valutazione della compatibilità ambientale – paesaggistica Impianti di produzione ad energia eolica, ARPA Puglia; Maggio 2013;
 35. Health effects and wind turbines: A review of the literature, Knopper L D and Ollson CA. – *Environmental Health*, 10:78; 2011;
 36. Adverse health effects of industrial wind turbines: a preliminary report, Nissenbaum M, Aramini J, Hanning C – 10th International Congress on Noise as a Public Health Problem (ICBEN); London, UK; 2011;
 37. Wind Turbine Health Impact Study: Report of Independent Expert Panel (January 2012) Prepared for: Massachusetts Department of Environmental Protection; Massachusetts Department of Public Health;
 38. Wind Turbine Syndrome. A Report on a Natural Experiment, Pierpont N.; 2009.

Allegato n. 1

RICETTORI SHADOW



fg 006400 / pila 114
fg 006300 / pila 342
fg 006400 / pila 169
fg 63 / pila 164
fg 006300 / pila 265
fg 001500 / pila 341
fg 001500 / pila 235
fg 006800 / pila 358
fg 006800 / pila 191
fg 006800 / pila 45
fg 69 / pila 13
fg 69 / pila 24
fg 006800 / pila 53
fg 006800 / pila 187
fg 68 / pila 28
fg 006800 / pila 19
fg 006800 / pila 14
fg 69 / pila 10
fg 69 / pila 43
fg 68 / pila 196
fg 000600 / pila 14
fg 69 / pila 113
fg 69 / pila 226
fg 69 / pila 222
wtg5
fg 000600 / pila 71
fg 000400 / pila 12
fg 000400 / pila 155
fg 000500 / pila 43
fg 69 / pila 171
fg 000500 / pila 47
fg 000400 / pila 157
fg 000400 / pila 151
fg 000400 / pila 87
fg 000400 / pila 154
fg 000400 / pila 154

fg 000500 / pila 329
fg 000500 / pila 298
fg 000500 / pila 258
fg 001300 / pila 458
fg 001300 / pila 442
fg 001300 / pila 28
fg 12 / pila 242
fg 001200 / pila 254
fg 001200 / pila 81
wtg4
fg 001300 / pila 443
fg 001300 / pila 444
fg 21 / pila 128
fg 21 / pila 129
fg 002200 / pila 37
fg 002200 / pila 182
fg 002300 / pila 499
fg 002200 / pila 172
fg 002200 / pila A
fg 002300 / pila 265
fg 002300 / pila 198
fg 002200 / pila 63
fg 002200 / pila 173
wtg3
fg 002300 / pila 411

fg 002800 / pila 340
fg 002300 / pila 441
fg 002300 / pila 502
fg 002700 / pila 135
fg 002800 / pila 326
fg 002900 / pila 334
fg 002300 / pila 353
fg 002700 / pila 43
fg 002800 / pila 345
fg 002900 / pila 335
fg 002900 / pila 333
fg 003000 / pila 46
fg 002800 / pila 330
fg 002800 / pila 106
fg 002700 / pila 63
fg 002700 / pila 76
fg 002700 / pila 206

fg 000300 / pila 14
fg 000300 / pila 298
fg 000500 / pila 203
fg 000500 / pila 184
fg 000300 / pila 288
fg 000300 / pila 297
fg 001200 / pila 216
fg 001200 / pila 193
fg 001200 / pila 228
fg 001200 / pila 130
fg 000600 / pila 133
fg 001200 / pila 207
fg 001200 / pila 227
fg 001200 / pila 221
fg 001200 / pila 224
fg 001400 / pila 182
fg 001400 / pila 193
fg 001400 / pila A

fg 000100 / pila 58
fg 000100 / pila 58
wtg1
fg 000600 / pila 19
fg 000300 / pila 126
fg 000600 / pila 89
fg 000600 / pila 93
fg 000600 / pila 92
wtg2
fg 002600 / pila 203
fg 002600 / pila 208
fg 002600 / pila 159
fg 002600 / pila 8
fg 001400 / pila 27
fg 001400 / pila 26
fg 002600 / pila 24
fg 002700 / pila 280
fg 001400 / pila 87
fg 002700 / pila 278
fg 001300 / pila 61
fg 002700 / pila 80

fg 002700 / pila 44
fg 002700 / pila 35
fg 002700 / pila 53
SS212
fg 003800 / pila 12
fg 003800 / pila 103
fg 003800 / pila 104
fg 003800 / pila 327
fg 003600 / pila 210
fg 003600 / pila 96
fg 003600 / pila 212
fg 003700 / pila 368
fg 003700 / pila 247
fg 003700 / pila 248



fg	pila	Categoria	Località	Provincia
000600	71	A03 - D10	Ripabottoni	Campobasso
000600	74	C06	Ripabottoni	Campobasso
000600	76	F02	Ripabottoni	Campobasso
000600	14	A04	Ripabottoni	Campobasso
006800	73	A04	Casacalenda	Campobasso
006800	181	A03 - D10	Casacalenda	Campobasso
006800	109	Non Acc	Casacalenda	Campobasso
006800	37	Non Acc	Casacalenda	Campobasso
006800	45	E01	Casacalenda	Campobasso
006800	187	A02 - C06	Casacalenda	Campobasso
006800	189	A02 - C06	Casacalenda	Campobasso
006800	200	E01	Casacalenda	Campobasso
006800	199	E01	Casacalenda	Campobasso
006800	201	E01	Casacalenda	Campobasso
006400	110	Non Acc	Casacalenda	Campobasso
001500	12	FABB DIRUTO	Bonefro	Campobasso
001500	341	A02 - D10	Bonefro	Campobasso
001500	380	A04 - D10	Bonefro	Campobasso
001500	268	D01	Bonefro	Campobasso
001500	235	D10	Bonefro	Campobasso
001500	235	D10	Bonefro	Campobasso
001500	344	D10	Bonefro	Campobasso
001500	339	C02	Bonefro	Campobasso
001500	337	A02 - C02 - D10	Bonefro	Campobasso
001500	338	A04 - C02	Bonefro	Campobasso
001500	336	C02	Bonefro	Campobasso
001500	133	FABB DIRUTO	Bonefro	Campobasso
006400	169	D10	Casacalenda	Campobasso
006400	169	D10	Casacalenda	Campobasso
006400	164	D10	Casacalenda	Campobasso
006400	164	D10	Casacalenda	Campobasso
006400	163	A04 - C06 - D10	Casacalenda	Campobasso
006300	332	C06	Casacalenda	Campobasso
006400	181	A04 - C02	Casacalenda	Campobasso
006400	182	A04	Casacalenda	Campobasso
006400	114	D10	Casacalenda	Campobasso
006400	175	A03 - D10	Casacalenda	Campobasso
006400	176	D10	Casacalenda	Campobasso
006400	171	D10	Casacalenda	Campobasso
006400	171	D10	Casacalenda	Campobasso
006400	183	D10	Casacalenda	Campobasso
006300	342	A03 - C02 - D10	Casacalenda	Campobasso
006300	358	A03 - D10	Casacalenda	Campobasso
006300	358	A03 - D10	Casacalenda	Campobasso
006300	255	A03 - D10	Casacalenda	Campobasso
006300	255	A03 - D10	Casacalenda	Campobasso
006300	255	A03 - D10	Casacalenda	Campobasso
006800	195	A04 - C02	Casacalenda	Campobasso
006800	55	FABB DIRUTO	Casacalenda	Campobasso
006800	157	A04 - D10	Casacalenda	Campobasso
006800	190	A03 - C02	Casacalenda	Campobasso
006800	191	C06	Casacalenda	Campobasso
006800	157	A04 - D10	Casacalenda	Campobasso
000400	158	C02	Ripabottoni	Campobasso
000400	152	C02	Ripabottoni	Campobasso
000400	155	C02	Ripabottoni	Campobasso
000400	12	FABB DIRUTO	Ripabottoni	Campobasso
000500	64	FABB DIRUTO	Ripabottoni	Campobasso

000500	43	FABB DIRUTO	Ripabottoni	Campobasso
000700	271	F02	Ripabottoni	Campobasso
000500	47	F02	Ripabottoni	Campobasso
000400	151	F02	Ripabottoni	Campobasso
000400	156	A04 - C02	Ripabottoni	Campobasso
000400	157	C02	Ripabottoni	Campobasso
000400	150	C02 - F02	Ripabottoni	Campobasso
000400	87	FABB DIRUTO	Ripabottoni	Campobasso
000400	154	F02	Ripabottoni	Campobasso
000400	154	F02	Ripabottoni	Campobasso
001300	442	C06	Ripabottoni	Campobasso
001300	28	FABB DIRUTO	Ripabottoni	Campobasso
001300	458	C02	Ripabottoni	Campobasso
000500	183	F01	Ripabottoni	Campobasso
000500	329	D10	Ripabottoni	Campobasso
000500	329	D10	Ripabottoni	Campobasso
000500	108	A03 - C02 - C06 -	Ripabottoni	Campobasso
000500	258	C02 - C06	Ripabottoni	Campobasso
000500	298	D10	Ripabottoni	Campobasso
000500	117	FABB DIRUTO	Ripabottoni	Campobasso
001200	237	D10	Ripabottoni	Campobasso
001200	254	A03 - D10	Ripabottoni	Campobasso
001200	255	C06	Ripabottoni	Campobasso
001200	241	A04 - D10	Ripabottoni	Campobasso
001200	128	C02 - C06	Ripabottoni	Campobasso
001200	129	C02 - C06	Ripabottoni	Campobasso
001200	81	F04	Ripabottoni	Campobasso
001300	443	A04 - D10	Ripabottoni	Campobasso
001300	444	A04 - D10	Ripabottoni	Campobasso
002300	499	FABB DIRUTO	Ripabottoni	Campobasso
002300	496	FABB DIRUTO	Ripabottoni	Campobasso
002300	497	FABB DIRUTO	Ripabottoni	Campobasso
002300	27	FABB DIRUTO	Ripabottoni	Campobasso
002300	354	FABB DIRUTO	Ripabottoni	Campobasso
002300	376	FABB DIRUTO	Ripabottoni	Campobasso
002300	28	FABB DIRUTO	Ripabottoni	Campobasso
002300	386	FABB DIRUTO	Ripabottoni	Campobasso
002300	385	FABB DIRUTO	Ripabottoni	Campobasso
002300	33	FABB DIRUTO	Ripabottoni	Campobasso
002300	204	FABB DIRUTO	Ripabottoni	Campobasso
002300	205	FABB RURALE	Ripabottoni	Campobasso
002300	198	FABB RURALE	Ripabottoni	Campobasso
002300	411	FABB DIRUTO	Ripabottoni	Campobasso
002300	412	FABB DIRUTO	Ripabottoni	Campobasso
002300	413	FABB DIRUTO	Ripabottoni	Campobasso
002300	508	A03 - D10	Ripabottoni	Campobasso
002300	502	D10	Ripabottoni	Campobasso
002300	507	D10	Ripabottoni	Campobasso
002300	353	FABB DIRUTO	Ripabottoni	Campobasso
002300	355	FABB DIRUTO	Ripabottoni	Campobasso
002300	356	FABB DIRUTO	Ripabottoni	Campobasso
002300	367	FABB DIRUTO	Ripabottoni	Campobasso
002300	509	D10	Ripabottoni	Campobasso
002900	335	A04 - C02 -C06	Ripabottoni	Campobasso
002900	334	C02	Ripabottoni	Campobasso
002900	333	D10	Ripabottoni	Campobasso
002900	325	A03 - D10	Ripabottoni	Campobasso
002900	325	A03 - D10	Ripabottoni	Campobasso
002900	332	D10	Ripabottoni	Campobasso

002900	325	A03 - D10	Ripabottoni	Campobasso
002800	300	D10	Ripabottoni	Campobasso
002900	331	C02	Ripabottoni	Campobasso
002800	342	A03 - C06	Ripabottoni	Campobasso
002900	106	FABB DIRUTO	Ripabottoni	Campobasso
002900	36	A04	Ripabottoni	Campobasso
002900	35	A04	Ripabottoni	Campobasso
002800	326	A03 - D10	Ripabottoni	Campobasso
002800	323	C02 - F02	Ripabottoni	Campobasso
002300	506	C02	Ripabottoni	Campobasso
002300	504	C02	Ripabottoni	Campobasso
002300	504	C02	Ripabottoni	Campobasso
002300	441	FABB DIRUTO	Ripabottoni	Campobasso
002300	505	C02	Ripabottoni	Campobasso
002200	173	A03 - D10	Ripabottoni	Campobasso
002800	327	A03 - D10	Ripabottoni	Campobasso
002200	181	A02 - D10	Ripabottoni	Campobasso
002200	182	D10	Ripabottoni	Campobasso
002200	37	E01	Ripabottoni	Campobasso
002200	A	E07	Ripabottoni	Campobasso
002200	183	E07	Ripabottoni	Campobasso
002200	63	FABB DIRUTO	Ripabottoni	Campobasso
002200	172	A04 - C02 - C06 -	Ripabottoni	Campobasso
002200	172	A04 - C02 - C06 -	Ripabottoni	Campobasso
002800	341	D10	Ripabottoni	Campobasso
002700	41	E01	Ripabottoni	Campobasso
002800	346	A04 - C02	Ripabottoni	Campobasso
002800	347	D10	Ripabottoni	Campobasso
002800	347	D10	Ripabottoni	Campobasso
002800	340	C02	Ripabottoni	Campobasso
002700	43	FABB DIRUTO	Ripabottoni	Campobasso
002700	135	FABB DIRUTO	Ripabottoni	Campobasso
002700	73	A03 - C02 - C06 -	Ripabottoni	Campobasso
002700	76	FABB DIRUTO	Ripabottoni	Campobasso
002700	206	C06	Ripabottoni	Campobasso
002700	73	A03 - C02 - C06 -	Ripabottoni	Campobasso
002700	196	A03 - C06	Ripabottoni	Campobasso
002700	63	F03	Ripabottoni	Campobasso
002800	266	FU D ACCERT	Ripabottoni	Campobasso
002800	331	FU D ACCERT	Ripabottoni	Campobasso
002800	330	D10	Ripabottoni	Campobasso
002800	333	E03	Ripabottoni	Campobasso
002800	345	A04 - D10	Ripabottoni	Campobasso
002800	106	FABB DIRUTO	Ripabottoni	Campobasso
003000	46	F02	Ripabottoni	Campobasso
003000	48	D10	Ripabottoni	Campobasso
003000	47	FU D ACCERT	Ripabottoni	Campobasso
000300	297	D10	Monacilioni	Campobasso
000300	288	FABB DIRUTO	Monacilioni	Campobasso
000300	236	A03 - C02 - C06	Monacilioni	Campobasso
000300	298	C06	Monacilioni	Campobasso
000500	373	F02	Sant'Elia a Pianisi	Campobasso
000500	184	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
000500	203	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
000500	201	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
000500	200	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	199	A04	Sant'Elia a Pianisi	Campobasso
001200	199	A04	Sant'Elia a Pianisi	Campobasso
001200	214	F02	Sant'Elia a Pianisi	Campobasso

001200	197	C06	Sant'Elia a Pianisi	Campobasso
001200	213	C02	Sant'Elia a Pianisi	Campobasso
001200	209	C02	Sant'Elia a Pianisi	Campobasso
001200	196	A04	Sant'Elia a Pianisi	Campobasso
001200	200	C02	Sant'Elia a Pianisi	Campobasso
001200	201	A04	Sant'Elia a Pianisi	Campobasso
001200	217	A04	Sant'Elia a Pianisi	Campobasso
001200	218	A04	Sant'Elia a Pianisi	Campobasso
001200	218	A04	Sant'Elia a Pianisi	Campobasso
001200	216	D10	Sant'Elia a Pianisi	Campobasso
000500	377	C02	Sant'Elia a Pianisi	Campobasso
000500	376	D10	Sant'Elia a Pianisi	Campobasso
001200	193	C06	Sant'Elia a Pianisi	Campobasso
001200	228	C02	Sant'Elia a Pianisi	Campobasso
001200	130	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	173	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	131	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	172	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	221	F02	Sant'Elia a Pianisi	Campobasso
001200	227	C02 - F03	Sant'Elia a Pianisi	Campobasso
001200	223	A04 - C02	Sant'Elia a Pianisi	Campobasso
001200	207	A07 - C06 -D10	Sant'Elia a Pianisi	Campobasso
001200	207	A07 - C06 -D10	Sant'Elia a Pianisi	Campobasso
000600	133	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001200	225	D10	Sant'Elia a Pianisi	Campobasso
001200	226	D10	Sant'Elia a Pianisi	Campobasso
001200	224	C02	Sant'Elia a Pianisi	Campobasso
001400	182	A04	Sant'Elia a Pianisi	Campobasso
001400	193	A04 - C02 - C06	Sant'Elia a Pianisi	Campobasso
001400	A	E07	Sant'Elia a Pianisi	Campobasso
001400	27	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001400	24	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001400	26	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
001400	25	FABB RURALE	Sant'Elia a Pianisi	Campobasso
001400	87	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	280	C02	Sant'Elia a Pianisi	Campobasso
001300	61	C02	Sant'Elia a Pianisi	Campobasso
002700	43	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	44	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	29	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	29	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	34	Non Acc	Sant'Elia a Pianisi	Campobasso
002700	31	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	35	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	53	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	54	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002700	55	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003800	12	FABB RURALE	Sant'Elia a Pianisi	Campobasso
003800	20	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003800	104	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003800	103	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003800	327	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003700	368	A04 - C06	Sant'Elia a Pianisi	Campobasso
003700	248	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003700	247	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003600	96	FABB RURALE	Sant'Elia a Pianisi	Campobasso
003600	211	A04 - C02	Sant'Elia a Pianisi	Campobasso
003600	212	C02	Sant'Elia a Pianisi	Campobasso
003600	207	C02	Sant'Elia a Pianisi	Campobasso

003600	206	C02	Sant'Elia a Pianisi	Campobasso
003600	209	A04	Sant'Elia a Pianisi	Campobasso
003600	208	C02 - C06	Sant'Elia a Pianisi	Campobasso
003600	210	C02	Sant'Elia a Pianisi	Campobasso
003600	73	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003600	72	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003600	71	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003600	70	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003600	69	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
003700	314	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002600	8	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002600	211	C02 - F03	Sant'Elia a Pianisi	Campobasso
002600	210	C02 - F02	Sant'Elia a Pianisi	Campobasso
002600	159	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002600	208	D10	Sant'Elia a Pianisi	Campobasso
002600	209	C02	Sant'Elia a Pianisi	Campobasso
002600	206	C02	Sant'Elia a Pianisi	Campobasso
002600	31	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
002600	207	C02	Sant'Elia a Pianisi	Campobasso
002600	214	D10	Sant'Elia a Pianisi	Campobasso
002600	213	D10	Sant'Elia a Pianisi	Campobasso
002600	198	C02	Sant'Elia a Pianisi	Campobasso
002600	202	C02	Sant'Elia a Pianisi	Campobasso
002600	203	A03 - C06 - D10	Sant'Elia a Pianisi	Campobasso
002600	205	A03	Sant'Elia a Pianisi	Campobasso
002600	24	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
000300	126	Non Acc	Monacilioni	Campobasso
000600	19	FABB RURALE	Monacilioni	Campobasso
000600	205	FABB RURALE	Monacilioni	Campobasso
000600	206	FABB RURALE	Monacilioni	Campobasso
000600	93	FABB RURALE	Monacilioni	Campobasso
000600	92	FABB RURALE	Monacilioni	Campobasso
000600	90	FABB RURALE	Monacilioni	Campobasso
000600	89	FABB RURALE	Monacilioni	Campobasso
000600	91	FABB RURALE	Monacilioni	Campobasso
000600	264	A04 - C02	Monacilioni	Campobasso
000100	24	FABB DIRUTO	Monacilioni	Campobasso
000100	58	A04 - C06 - D10 -	Monacilioni	Campobasso
000100	58	A04 - C06 - D10 -	Monacilioni	Campobasso
000300	14	B07	Sant'Elia a Pianisi	Campobasso
000400	6	A03 - D10	Sant'Elia a Pianisi	Campobasso
001400	199	A04	Sant'Elia a Pianisi	Campobasso
002700	278	C02	Sant'Elia a Pianisi	Campobasso
002700	80	FABB DIRUTO	Sant'Elia a Pianisi	Campobasso
69	221	A03 - D10	Casacalenda	Campobasso
69	221	A03 - D10	Casacalenda	Campobasso
69	219	A04 - D10	Casacalenda	Campobasso
69	222	C02	Casacalenda	Campobasso
68	196	C02	Casacalenda	Campobasso
68	28	Non Acc	Casacalenda	Campobasso
69	24	Non Acc	Casacalenda	Campobasso
69	13	Non Acc	Casacalenda	Campobasso
69	49	FABB DIRUTO	Casacalenda	Campobasso
69	226	Non Acc	Casacalenda	Campobasso
69	113	Non Acc	Casacalenda	Campobasso
69	104	E09	Casacalenda	Campobasso
63	164	Non Acc	Casacalenda	Campobasso
69	171	Non Acc	Casacalenda	Campobasso
12	242	FABB DIRUTO	Ripabottoni	Campobasso

21	128	C06 - F03	Ripabottoni	Campobasso
21	129	C02	Ripabottoni	Campobasso
21	131	C02	Ripabottoni	Campobasso
12	163	FABB DIRUTO	Ripabottoni	Campobasso

Allegato n. 2

TABULAZIONI RISULTATI DI CALCOLO WINDPRO

SHADOW - Main Result

Assumptions for shadow calculations

Maximum distance for influence
 Calculate only when more than 20 % of sun is covered by the blade
 Please look in WTG table

Minimum sun height over horizon for influence 3 °
 Day step for calculation 1 days
 Time step for calculation 1 minutes

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational hours are calculated from WTGs in calculation and wind distribution:

Site data: WASP

Operational time
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799

Idle start wind speed: Cut in wind speed from power curve
 A ZVI (Zones of Visual Influence) calculation is performed before flicker calculation so non visible WTG do not contribute to calculated flicker values. A WTG will be visible if it is visible from any part of the receiver window. The ZVI calculation is based on the following assumptions:
 Height contours used: Height Contours: CONTOURLINE_ONLINEDATA_0.wpo
 Receptor grid resolution: 1,0 m

All coordinates are in UTM (north)-WGS84 Zone: 33

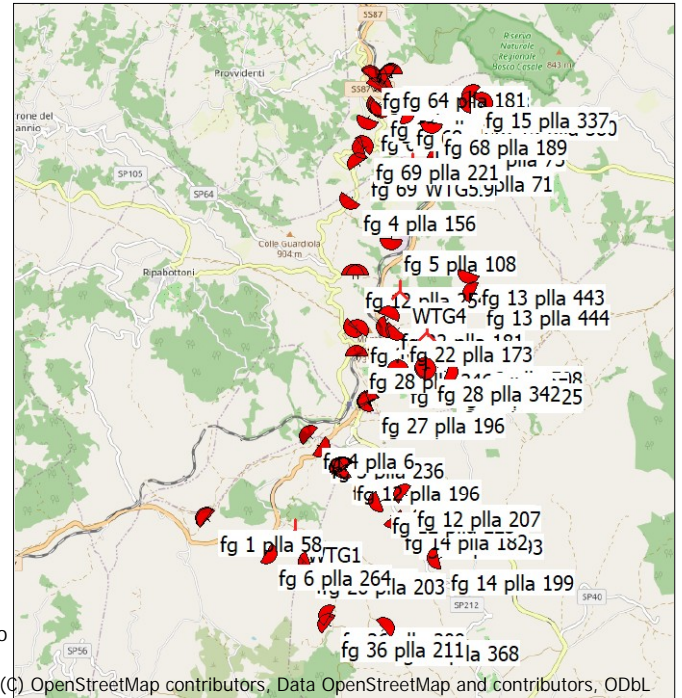
WTGs

	Easting	Northing	Z	Row data/Description	WTG type			Shadow data				
					Valid	Manufact.	Type-generator	Power, rated [kW]	Rotor diameter [m]	Hub height [m]	Calculation distance [m]	RPM [RPM]
WTG1	486.125	4.611.005	749,0	VESTAS V162-6.2 6200 162.0 !...Yes	Valid	VESTAS	V162-6.2-6.200	6.200	162,0	119,0	2.041	-
WTG2	487.052	4.610.566	654,6	VESTAS V162-6.2 6200 162.0 !...Yes	Valid	VESTAS	V162-6.2-6.200	6.200	162,0	119,0	2.041	-
WTG3	488.322	4.614.276	563,1	VESTAS V162-6.2 6200 162.0 !...Yes	Valid	VESTAS	V162-6.2-6.200	6.200	162,0	119,0	2.041	-
WTG4	487.882	4.614.972	633,4	VESTAS V162-6.2 6200 162.0 !...Yes	Valid	VESTAS	V162-6.2-6.200	6.200	162,0	119,0	2.041	-
WTG5	488.089	4.617.061	722,5	VESTAS V162-6.2 6200 162.0 !...Yes	Valid	VESTAS	V162-6.2-6.200	6.200	162,0	119,0	2.041	-

Shadow receptor-Input

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l.	Degrees from south cw	Slope of window	Direction mode	Eye height (ZVI) a.g.l.
			[m]	[m]	[m]	[m]	[°]	[°]		[m]
fg 68 plla 157	487.910	4.617.905	656,6	1,0	1,0	1,3	22,4	90,0	Fixed direction	2,3
fg 1 plla 58	484.667	4.611.209	880,0	1,0	1,0	1,3	-55,6	90,0	Fixed direction	2,3
fg 1 plla 58	484.682	4.611.191	880,0	1,0	1,0	1,3	-46,8	90,0	Fixed direction	2,3
fg 12 plla 196	486.944	4.612.039	673,4	1,0	1,0	1,3	-37,9	90,0	Fixed direction	2,3
fg 12 plla 199	486.903	4.612.049	679,6	1,0	1,0	1,3	-35,6	90,0	Fixed direction	2,3
fg 12 plla 199	486.896	4.612.052	680,6	1,0	1,0	1,3	-26,9	90,0	Fixed direction	2,3
fg 12 plla 201	486.950	4.612.044	673,4	1,0	1,0	1,3	-38,2	90,0	Fixed direction	2,3
fg 12 plla 207	487.960	4.611.595	573,5	1,0	1,0	1,3	-57,0	90,0	Fixed direction	2,3
fg 12 plla 207	487.854	4.611.615	578,6	1,0	1,0	1,3	-116,8	90,0	Fixed direction	2,3
fg 12 plla 217	486.954	4.612.046	673,2	1,0	1,0	1,3	-127,2	90,0	Fixed direction	2,3
fg 12 plla 218	486.952	4.612.049	673,8	1,0	1,0	1,3	-38,5	90,0	Fixed direction	2,3
fg 12 plla 218	486.954	4.612.042	672,6	1,0	1,0	1,3	-39,8	90,0	Fixed direction	2,3
fg 12 plla 223	487.538	4.611.498	604,5	1,0	1,0	1,3	-108,6	90,0	Fixed direction	2,3
fg 12 plla 241	487.176	4.615.224	759,0	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 12 plla 254	487.089	4.615.216	770,0	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 13 plla 443	489.017	4.615.261	562,0	1,0	1,0	1,3	-160,3	90,0	Fixed direction	2,3
fg 13 plla 444	489.112	4.614.926	530,0	1,0	1,0	1,3	-67,2	90,0	Fixed direction	2,3
fg 14 plla 182	487.751	4.611.221	576,7	1,0	1,0	1,3	-222,1	90,0	Fixed direction	2,3
fg 14 plla 193	488.001	4.611.130	574,1	1,0	1,0	1,3	-157,4	90,0	Fixed direction	2,3
fg 14 plla 199	488.504	4.610.555	572,9	1,0	1,0	1,3	-102,5	90,0	Fixed direction	2,3
fg 15 plla 337	489.098	4.618.178	630,0	1,0	1,0	1,3	-45,7	90,0	Fixed direction	2,3

To be continued on next page...



Scale 1:125.000
 ▲ New WTG ● Shadow receptor

SHADOW - Main Result

...continued from previous page

No.	Easting	Northing	Z	Width	Height	Elevation a.g.l. [m]	Degrees from south cw [°]	Slope of window [°]	Direction mode	Eye height (ZVI) a.g.l. [m]
fg 15 plla 338	489.108	4.618.174	630,0	1,0	1,0	1,3	-37,9	90,0	Fixed direction	2,3
fg 15 plla 341	489.055	4.618.069	628,3	1,0	1,0	1,3	-87,8	90,0	Fixed direction	2,3
fg 15 plla 380	489.245	4.618.048	650,1	1,0	1,0	1,3	35,1	90,0	Fixed direction	2,3
fg 22 plla 172	487.117	4.614.377	725,7	1,0	1,0	1,3	-132,4	90,0	Fixed direction	2,3
fg 22 plla 172	487.185	4.614.311	720,0	1,0	1,0	1,3	34,8	90,0	Fixed direction	2,3
fg 22 plla 173	487.835	4.614.326	631,2	1,0	1,0	1,3	-137,6	90,0	Fixed direction	2,3
fg 22 plla 181	487.699	4.614.541	640,0	1,0	1,0	1,3	26,8	90,0	Fixed direction	2,3
fg 23 plla 508	488.654	4.613.906	545,9	1,0	1,0	1,3	-22,8	90,0	Fixed direction	2,3
fg 26 plla 203	486.367	4.610.482	674,6	1,0	1,0	1,3	-110,0	90,0	Fixed direction	2,3
fg 26 plla 205	486.271	4.610.501	682,3	1,0	1,0	1,3	43,4	90,0	Fixed direction	2,3
fg 27 plla 196	487.356	4.613.158	676,7	1,0	1,0	1,3	-115,0	90,0	Fixed direction	2,3
fg 27 plla 73	487.355	4.613.149	675,8	1,0	1,0	1,3	-20,4	90,0	Fixed direction	2,3
fg 27 plla 73	487.366	4.613.134	674,6	1,0	1,0	1,3	-27,6	90,0	Fixed direction	2,3
fg 28 plla 326	488.128	4.613.900	605,3	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 28 plla 327	487.660	4.614.367	654,9	1,0	1,0	1,3	-105,4	90,0	Fixed direction	2,3
fg 28 plla 342	488.293	4.613.690	603,1	1,0	1,0	1,3	92,6	90,0	Fixed direction	2,3
fg 28 plla 345	487.855	4.613.636	650,0	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 28 plla 346	487.170	4.613.882	680,0	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 29 plla 325	488.627	4.613.565	543,8	1,0	1,0	1,3	-104,7	90,0	Fixed direction	2,3
fg 29 plla 325	488.655	4.613.593	545,4	1,0	1,0	1,3	-231,2	90,0	Fixed direction	2,3
fg 29 plla 325	488.650	4.613.633	549,3	1,0	1,0	1,3	-251,6	90,0	Fixed direction	2,3
fg 29 plla 335	488.422	4.613.804	582,4	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 29 plla 35	488.323	4.613.706	600,0	1,0	1,0	1,3	-77,7	90,0	Fixed direction	2,3
fg 29 plla 36	488.312	4.613.695	601,1	1,0	1,0	1,3	-84,7	90,0	Fixed direction	2,3
fg 3 plla 236	486.538	4.612.405	721,4	1,0	1,0	1,3	-236,8	90,0	Fixed direction	2,3
fg 36 plla 209	486.704	4.609.593	609,8	1,0	1,0	1,3	-60,8	90,0	Fixed direction	2,3
fg 36 plla 211	486.687	4.609.456	601,7	1,0	1,0	1,3	-51,5	90,0	Fixed direction	2,3
fg 37 plla 368	487.598	4.609.406	610,0	1,0	1,0	1,3	47,5	90,0	Fixed direction	2,3
fg 4 plla 156	487.070	4.616.492	822,6	1,0	1,0	1,3	-146,4	90,0	Fixed direction	2,3
fg 4 plla 6	486.391	4.612.578	744,3	1,0	1,0	1,3	-46,3	90,0	Fixed direction	2,3
fg 5 plla 108	487.744	4.615.826	726,0	1,0	1,0	1,3	-177,3	90,0	Fixed direction	2,3
fg 6 plla 14	488.555	4.617.532	643,1	1,0	2,0	1,0	-46,1	90,0	Fixed direction	3,0
fg 6 plla 264	485.662	4.610.627	745,0	1,0	1,0	1,3	-240,7	90,0	Fixed direction	2,3
fg 6 plla 71	488.519	4.617.133	670,3	1,0	3,0	1,0	-78,8	90,0	Fixed direction	4,0
fg 63 plla 255	487.559	4.618.022	667,8	1,0	1,0	1,3	-135,4	90,0	Fixed direction	2,3
fg 63 plla 255	487.519	4.618.045	666,7	1,0	1,0	1,3	-134,2	90,0	Fixed direction	2,3
fg 63 plla 255	487.579	4.617.998	668,9	1,0	1,0	1,3	-136,1	90,0	Fixed direction	2,3
fg 63 plla 342	487.491	4.618.297	633,1	1,0	1,0	1,3	31,5	90,0	Fixed direction	2,3
fg 63 plla 358	487.391	4.618.493	632,6	1,0	1,0	1,3	38,1	90,0	Fixed direction	2,3
fg 63 plla 358	487.385	4.618.469	633,3	1,0	1,0	1,3	43,6	90,0	Fixed direction	2,3
fg 64 plla 163	487.700	4.618.465	613,6	1,0	1,0	1,3	-115,8	90,0	Fixed direction	2,3
fg 64 plla 175	487.749	4.618.539	606,0	1,0	1,0	1,3	0,0	90,0	Fixed direction	2,3
fg 64 plla 181	487.725	4.618.503	610,0	1,0	1,0	1,3	-45,6	90,0	Fixed direction	2,3
fg 64 plla 182	487.717	4.618.491	610,8	1,0	1,0	1,3	-56,8	90,0	Fixed direction	2,3
fg 68 plla 157	487.937	4.617.897	654,4	1,0	1,0	1,3	-248,1	90,0	Fixed direction	2,3
fg 68 plla 181	488.257	4.617.696	654,0	1,0	1,0	1,3	-161,6	90,0	Fixed direction	2,3
fg 68 plla 187	488.382	4.617.729	643,2	1,0	1,0	1,3	-43,3	90,0	Fixed direction	2,3
fg 68 plla 189	488.411	4.617.738	640,1	1,0	1,0	1,3	-170,2	90,0	Fixed direction	2,3
fg 68 plla 190	487.913	4.617.884	658,0	1,0	1,0	1,3	-65,8	90,0	Fixed direction	2,3
fg 68 plla 195	487.354	4.617.801	700,9	1,0	1,0	1,3	-162,3	90,0	Fixed direction	2,3
fg 68 plla 73	488.552	4.617.536	643,4	1,0	2,0	1,0	-214,5	90,0	Fixed direction	3,0
fg 69 plla 219	487.197	4.617.059	771,2	1,0	1,0	1,3	-37,6	90,0	Fixed direction	2,3
fg 69 plla 221	487.278	4.617.333	739,2	1,0	1,0	1,3	-102,5	90,0	Fixed direction	2,3
fg 69 plla 221	487.263	4.617.344	739,8	1,0	1,0	1,3	50,4	90,0	Fixed direction	2,3

Calculation Results

Shadow receptor

Shadow, expected values

No. Shadow hours
per year
[h/year]

fg 68 plla 157 0:00

fg 1 plla 58 0:00

To be continued on next page...

SHADOW - Main Result

...continued from previous page

No.	Shadow, expected values per year [h/year]
fg 1 plla 58	0:00
fg 12 plla 196	0:00
fg 12 plla 199	0:00
fg 12 plla 199	0:00
fg 12 plla 201	0:00
fg 12 plla 207	0:00
fg 12 plla 207	0:00
fg 12 plla 217	0:00
fg 12 plla 218	0:00
fg 12 plla 218	0:00
fg 12 plla 223	0:00
fg 12 plla 241	1:42
fg 12 plla 254	0:32
fg 13 plla 443	0:00
fg 13 plla 444	0:00
fg 14 plla 182	6:03
fg 14 plla 193	0:00
fg 14 plla 199	0:00
fg 15 plla 337	0:00
fg 15 plla 338	0:00
fg 15 plla 341	0:00
fg 15 plla 380	4:13
fg 22 plla 172	0:00
fg 22 plla 172	0:00
fg 22 plla 173	17:05
fg 22 plla 181	1:31
fg 23 plla 508	0:00
fg 26 plla 203	14:23
fg 26 plla 205	0:00
fg 27 plla 196	0:00
fg 27 plla 73	0:00
fg 27 plla 73	0:00
fg 28 plla 326	0:00
fg 28 plla 327	5:36
fg 28 plla 342	0:00
fg 28 plla 345	0:00
fg 28 plla 346	0:00
fg 29 plla 325	0:00
fg 29 plla 325	0:00
fg 29 plla 325	0:00
fg 29 plla 335	0:00
fg 29 plla 35	0:00
fg 29 plla 36	0:00
fg 3 plla 236	0:00
fg 36 plla 209	0:00
fg 36 plla 211	0:00
fg 37 plla 368	0:00
fg 4 plla 156	1:34
fg 4 plla 6	0:00
fg 5 plla 108	0:00
fg 6 plla 14	9:18
fg 6 plla 264	0:00
fg 6 plla 71	0:00
fg 63 plla 255	0:00
fg 63 plla 255	0:00
fg 63 plla 255	0:00
fg 63 plla 342	0:00
fg 63 plla 358	0:00
fg 63 plla 358	0:00
fg 64 plla 163	0:00
fg 64 plla 175	0:00
fg 64 plla 181	0:00
fg 64 plla 182	0:00

To be continued on next page...

SHADOW - Main Result

...continued from previous page

No.	Shadow, expected values per year [h/year]
fg 68 plla 157	0:00
fg 68 plla 181	0:00
fg 68 plla 187	0:23
fg 68 plla 189	0:00
fg 68 plla 190	0:00
fg 68 plla 195	0:00
fg 68 plla 73	0:00
fg 69 plla 219	5:14
fg 69 plla 221	7:10
fg 69 plla 221	0:00

Total amount of flickering on the shadow receptors caused by each WTG

No.	Name	Expected [h/year]
WTG1	VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (5)	2:04
WTG2	VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)	18:21
WTG3	VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)	18:38
WTG4	VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (2)	1:44
WTG5	VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)	27:55

Total times in Receptor wise and WTG wise tables can differ, as a WTG can lead to flicker at 2 or more receptors simultaneously and/or receptors may receive flicker from 2 or more WTGs simultaneously.

SHADOW - Calendar

Shadow receptor: fg 68 plla 157 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 1 plla 58 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (69)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:40	05:55 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:31 20:39	05:56 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:57 20:18	06:28 19:33	06:59 18:41	06:35 16:55	07:10 16:32
4	07:28 16:44	07:11 17:20	06:33 17:54	06:41 19:29	05:55 20:02	05:28 20:31	05:32 20:39	05:58 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:45	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:59 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:57	06:38 19:31	05:53 20:04	05:28 20:32	05:33 20:39	06:00 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:01 20:13	06:32 19:26	07:03 18:35	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:02 20:12	06:33 19:24	07:05 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:03 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:35	05:35 20:37	06:04 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:51	07:03 17:29	06:22 18:02	06:29 19:37	05:47 20:09	05:27 20:35	05:36 20:37	06:05 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:06 20:07	06:37 19:18	07:09 18:26	06:46 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:05	06:26 19:39	05:45 20:11	05:26 20:36	05:38 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:17 18:06	06:25 19:40	05:44 20:12	05:26 20:37	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:34	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:22	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:42 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:23 16:32
19	07:24 17:00	06:53 17:39	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:57	06:45 19:05	07:17 18:15	06:54 16:39	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:27 20:39	05:43 20:31	06:14 19:55	06:46 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:14	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:54	06:47 19:02	07:19 18:12	06:56 16:37	07:24 16:34
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:49	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:48 19:00	07:20 18:11	06:58 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	05:36 20:21	05:27 20:39	05:46 20:29	06:17 19:51	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:35
24	07:21 17:06	06:45 17:45	06:00 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:23 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:07	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:24	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:52	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:52 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:06 16:33	07:28 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:30 20:40	05:53 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:30 20:40	05:54 20:21	06:25 19:38	06:31 18:46	07:30 17:00	07:08 16:32	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 1 plla 58 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (70)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:55	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:26	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:31	05:56	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:43	05:57	05:29	05:31	05:57	06:28	06:59	06:35	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:32
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:58	06:29	07:00	06:36	07:11
	16:44	17:20	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:59	06:30	07:01	06:37	07:12
	16:45	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:38	05:53	05:28	05:33	06:00	06:31	07:02	06:38	07:13
	16:45	17:22	17:57	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:01	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:35	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:02	06:33	07:05	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:03	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:04	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:22	06:29	05:47	05:27	05:36	06:05	06:36	07:08	06:44	07:17
	16:51	17:29	18:02	19:37	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:06	06:37	07:09	06:46	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:18	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:38	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:05	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:17	06:25	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:34	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:22	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	20:00	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:42	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:53	06:08	06:17	05:39	05:26	05:42	06:13	06:45	07:17	06:54	07:23
	17:00	17:39	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:39	16:33
20	07:24	06:51	06:06	06:15	05:38	05:27	05:43	06:14	06:46	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:47	07:19	06:56	07:24
	17:02	17:41	18:14	19:47	20:19	20:39	20:30	19:54	19:02	18:12	16:37	16:34
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:48	07:20	06:58	07:25
	17:03	17:42	18:15	19:49	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:36	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:51	18:58	18:09	16:36	16:35
24	07:21	06:45	06:00	06:09	05:35	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:07	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:52	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:52	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:30	05:53	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:54	06:25		06:31		07:28
	17:14		19:25		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 196 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (53)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 199 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (51)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:42 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:08 16:32	07:29 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 199 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (52)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:26	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 201 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (54)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:42 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:08 16:32	07:29 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 207 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (59)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:34	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:26
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 207 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (60)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:14
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:34	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:22	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:26
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 217 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (55)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 218 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (56)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 218 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (57)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 223 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (58)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Monacilioni

SHADOW - Calendar

Shadow receptor: fg 12 plla 241 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	06:54 (WTG4) 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	06:55 (WTG4) 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	06:56 (WTG4) 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:02	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	06:58 (WTG4) 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	06:59 (WTG4) 16:31
6	07:28 16:45	07:09 17:22	07:29 (WTG4) 07:31 (WTG4)	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	07:28 (WTG4) 07:31 (WTG4)	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	06:00 20:38	06:32 20:13	07:03 19:26	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	07:27 (WTG4) 07:31 (WTG4)	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	06:01 20:38	06:33 20:12	07:04 19:24	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	07:25 (WTG4) 07:31 (WTG4)	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	06:02 20:38	06:34 20:10	07:06 19:23	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	07:24 (WTG4) 07:31 (WTG4)	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:35	06:03 20:37	06:35 20:09	07:07 19:21	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	07:23 (WTG4) 07:31 (WTG4)	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	06:04 20:37	06:36 20:08	07:08 19:19	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	07:22 (WTG4) 07:31 (WTG4)	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	07:20 (WTG4) 07:31 (WTG4)	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	07:19 (WTG4) 07:31 (WTG4)	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:37	06:07 20:35	06:39 20:04	07:11 19:14	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	07:18 (WTG4) 07:31 (WTG4)	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	07:16 (WTG4) 07:29 (WTG4)	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	06:10 20:34	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	07:15 (WTG4) 07:28 (WTG4)	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	07:13 (WTG4) 07:27 (WTG4)	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:23 16:32
19	07:24 16:59	06:52 17:38	07:12 (WTG4) 07:26 (WTG4)	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	06:13 19:57	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	07:10 (WTG4) 07:24 (WTG4)	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	06:14 20:31	06:45 19:55	07:18 19:04	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	07:09 (WTG4) 07:23 (WTG4)	06:05 18:13	06:13 19:47	05:37 20:19	05:26 20:39	06:15 20:30	06:46 19:54	07:19 19:02	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	07:08 (WTG4) 07:22 (WTG4)	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	06:16 20:30	06:47 19:52	07:20 19:00	06:58 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	07:06 (WTG4) 07:20 (WTG4)	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	06:17 20:29	06:49 19:50	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	07:05 (WTG4) 07:18 (WTG4)	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	06:18 20:28	06:48 19:49	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	07:03 (WTG4) 07:14 (WTG4)	05:58 18:18	06:08 19:52	05:34 20:23	05:27 20:40	06:19 20:27	06:51 19:47	06:24 18:55	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	07:01 (WTG4) 07:08 (WTG4)	05:56 18:19	06:06 19:53	05:33 20:24	05:28 20:40	06:20 20:26	06:52 19:46	06:25 18:53	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	07:00 (WTG4) 18:20	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	06:21 20:25	06:53 19:44	06:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	06:59 18:21	05:53 19:55	06:03 20:25	05:32 20:40	05:29 20:40	06:22 20:24	06:54 19:43	07:27 18:50	07:04 16:33	07:27 16:37
29	07:17 17:12	06:37 17:49	06:57 19:22	06:51 19:56	06:02 20:26	05:31 20:40	05:29 20:40	06:23 20:23	06:55 19:41	06:28 18:48	07:05 16:33	07:28 16:38
30	07:16 17:13	06:36 17:48	06:56 19:23	06:49 19:57	06:00 20:27	05:31 20:40	05:29 20:40	06:24 20:22	06:56 19:39	06:30 18:46	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:47	06:55 19:24	06:48 19:24	05:59 20:28	05:30 20:40	05:28 20:40	06:25 20:21	06:53 19:38	06:26 16:58	07:00 16:40	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case											21	
Sun reduction											0,46	
Oper. time red.											0,89	
Wind dir. red.											0,61	
Total reduction											0,25	
Total, real											53	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 12 plla 254 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:02	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:35	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:19 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:23 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:57	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:54	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:58 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	06:00 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:23 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	06:00 18:18	06:08 19:52	05:58 20:23	05:27 20:40	05:48 20:27	06:19 19:47	06:51 18:55	06:24 17:06	06:45 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	06:00 18:19	06:06 19:53	05:33 20:24	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	06:25 17:05	06:46 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	06:00 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	06:26 17:04	06:47 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	06:03 18:21	06:04 19:55	05:58 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	06:27 17:02	06:48 16:33	07:27 16:37
29	07:17 17:12		06:51 19:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	06:28 17:01	06:49 16:33	07:28 16:38
30	07:16 17:13		06:49 19:23	06:00 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	06:30 17:00	06:49 16:32	07:28 16:39
31	07:15 17:14		06:48 19:24		05:30 20:28		05:53 20:21	06:25 19:38		06:31 16:58		07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case										69		
Sun reduction										0,44		
Oper. time red.										0,89		
Wind dir. red.										0,60		
Total reduction										0,23		
Total, real										16		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 13 plla 443 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:15	06:37 17:50	06:46 19:25	05:59 19:58	05:29 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:44	06:32 16:57	07:08 16:32
2	07:28 16:41	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:31
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:34 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:47	07:15 16:30
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:30
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:27 19:37	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:43	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:05	06:24 19:40	05:43 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:40 20:15	05:26 20:38	05:40 20:33	06:10 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:11 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:03	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:34 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:40	05:48 20:27	06:19 19:47	06:50 18:55	07:23 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:48 20:26	06:20 19:46	06:52 18:53	07:24 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:25 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:28 20:40	05:50 20:24	06:22 19:42	06:54 18:50	07:26 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:48	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:27 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:47	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:28 16:59	07:06 16:32	07:28 16:39
31	07:15 17:14	06:36 17:46	05:50 18:24	06:00 19:58	05:29 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:29 16:58	07:07 16:40	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 13 plla 444 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:44	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:05	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:11	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:03	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:50	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 14 plla 182 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		
1	07:28	15:34 (WTG2)	07:14	15:30 (WTG2)	06:37	06:46	05:59	05:30
	16:41	9 15:43 (WTG2)	17:16	9 15:39 (WTG2)	17:50	19:25	19:58	20:28
2	07:28	15:34 (WTG2)	07:13		06:36	06:44	05:58	05:29
	16:42	10 15:44 (WTG2)	17:17		17:52	19:27	19:59	20:29
3	07:28	15:34 (WTG2)	07:12		06:34	06:42	05:57	05:29
	16:43	11 15:45 (WTG2)	17:18		17:53	19:28	20:00	20:30
4	07:28	15:35 (WTG2)	07:11		06:33	06:41	05:55	05:28
	16:43	10 15:45 (WTG2)	17:19		17:54	19:29	20:01	20:31
5	07:28	15:35 (WTG2)	07:10		06:31	06:39	05:54	05:28
	16:44	11 15:46 (WTG2)	17:21		17:55	19:30	20:02	20:31
6	07:28	15:35 (WTG2)	07:09		06:30	06:37	05:53	05:28
	16:45	11 15:46 (WTG2)	17:22		17:56	19:31	20:04	20:32
7	07:28	15:35 (WTG2)	07:08		06:28	06:36	05:52	05:27
	16:46	12 15:47 (WTG2)	17:23		17:58	19:32	20:05	20:33
8	07:28	15:34 (WTG2)	07:07		06:26	06:34	05:50	05:27
	16:47	13 15:47 (WTG2)	17:25		17:59	19:33	20:06	20:33
9	07:28	15:35 (WTG2)	07:05		06:25	06:32	05:49	05:27
	16:48	12 15:47 (WTG2)	17:26		18:00	19:34	20:07	20:34
10	07:28	15:35 (WTG2)	07:04		06:23	06:31	05:48	05:27
	16:49	13 15:48 (WTG2)	17:27		18:01	19:35	20:08	20:34
11	07:28	15:34 (WTG2)	07:03		06:21	06:29	05:47	05:26
	16:50	14 15:48 (WTG2)	17:28		18:02	19:36	20:09	20:35
12	07:27	15:34 (WTG2)	07:02		06:20	06:28	05:46	05:26
	16:51	15 15:49 (WTG2)	17:30		18:03	19:37	20:10	20:35
13	07:27	15:34 (WTG2)	07:01		06:18	06:26	05:45	05:26
	16:53	15 15:49 (WTG2)	17:31		18:04	19:39	20:11	20:36
14	07:27	15:34 (WTG2)	06:59		06:16	06:24	05:44	05:26
	16:54	15 15:49 (WTG2)	17:32		18:06	19:40	20:12	20:36
15	07:26	15:34 (WTG2)	06:58		06:15	06:23	05:43	05:26
	16:55	16 15:50 (WTG2)	17:33		18:07	19:41	20:13	20:37
16	07:26	15:33 (WTG2)	06:57		06:13	06:21	05:42	05:26
	16:56	17 15:50 (WTG2)	17:35	3	17:21 (WTG1)	19:42	20:14	20:37
17	07:25	15:34 (WTG2)	06:55		06:11	06:20	05:41	05:26
	16:57	16 15:50 (WTG2)	17:36	12	17:25 (WTG1)	19:43	20:15	20:38
18	07:25	15:33 (WTG2)	06:54		06:10	06:18	05:40	05:26
	16:58	17 15:50 (WTG2)	17:37	16	17:26 (WTG1)	19:44	20:16	20:38
19	07:24	15:32 (WTG2)	06:52		06:08	06:17	05:39	05:26
	16:59	18 15:50 (WTG2)	17:38	18	17:28 (WTG1)	19:45	20:17	20:38
20	07:24	15:32 (WTG2)	06:51		06:06	06:15	05:38	05:26
	17:01	19 15:51 (WTG2)	17:40	20	17:28 (WTG1)	19:46	20:18	20:39
21	07:23	15:32 (WTG2)	06:50		06:05	06:13	05:37	05:27
	17:02	18 15:50 (WTG2)	17:41	21	17:28 (WTG1)	19:47	20:19	20:39
22	07:22	15:31 (WTG2)	06:48		06:03	06:12	05:36	05:27
	17:03	19 15:50 (WTG2)	17:42	22	17:29 (WTG1)	19:48	20:20	20:39
23	07:22	15:31 (WTG2)	06:47		06:01	06:10	05:35	05:27
	17:04	19 15:50 (WTG2)	17:43	23	17:29 (WTG1)	19:49	20:21	20:39
24	07:21	15:31 (WTG2)	06:45		05:59	06:09	05:35	05:27
	17:06	19 15:50 (WTG2)	17:44	22	17:28 (WTG1)	19:51	20:22	20:39
25	07:20	15:30 (WTG2)	06:44		05:58	06:08	05:34	05:28
	17:07	19 15:49 (WTG2)	17:46	21	17:27 (WTG1)	19:52	20:22	20:39
26	07:20	15:29 (WTG2)	06:42		05:56	06:06	05:33	05:28
	17:08	19 15:48 (WTG2)	17:47	20	17:27 (WTG1)	19:53	20:23	20:40
27	07:19	15:29 (WTG2)	06:41		05:54	06:05	05:32	05:28
	17:09	19 15:48 (WTG2)	17:48	18	17:25 (WTG1)	19:54	20:24	20:40
28	07:18	15:28 (WTG2)	06:39		05:53	06:03	05:32	05:29
	17:11	19 15:47 (WTG2)	17:49	15	17:23 (WTG1)	19:55	20:25	20:40
29	07:17	15:27 (WTG2)			06:51	18:10 (WTG1)	06:02	05:29
	17:12	19 15:46 (WTG2)		12	18:22 (WTG1)	19:56	20:26	20:40
30	07:16	15:28 (WTG2)			06:49	18:14 (WTG1)	06:01	05:29
	17:13	17 15:45 (WTG2)		3	18:17 (WTG1)	19:57	20:27	20:40
31	07:15	15:27 (WTG2)			06:48		05:30	
	17:14	16 15:43 (WTG2)			19:24		20:28	
Potential sun hours	296	296	369	399	450	454		
Total, worst case	477	9	246					
Sun reduction	0,44	0,46	0,44					
Oper. time red.	0,89	0,89	0,89					
Wind dir. red.	0,58	0,58	0,55					
Total reduction	0,23	0,24	0,22					
Total, real	109	2	53					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 14 plla 182 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (61)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December	
1	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32	15:16 (WTG2) 14 15:30 (WTG2)
2	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32	15:18 (WTG2) 13 15:31 (WTG2)
3	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31	15:19 (WTG2) 13 15:32 (WTG2)
4	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31	15:19 (WTG2) 13 15:32 (WTG2)
5	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31	15:20 (WTG2) 12 15:32 (WTG2)
6	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31	15:21 (WTG2) 11 15:32 (WTG2)
7	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31	15:22 (WTG2) 11 15:33 (WTG2)
8	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:14 16:31	15:23 (WTG2) 10 15:33 (WTG2)
9	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31	15:22 (WTG2) 11 15:33 (WTG2)
10	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:47	07:16 16:31	15:23 (WTG2) 10 15:33 (WTG2)
11	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31	15:24 (WTG2) 10 15:34 (WTG2)
12	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31	15:25 (WTG2) 9 15:34 (WTG2)
13	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31	15:26 (WTG2) 9 15:35 (WTG2)
14	05:38 20:35	06:08 20:04	06:39 19:14	18:01 (WTG1) 18:12 (WTG1)	07:11 18:23	06:48 16:43	15:01 (WTG2) 19 15:20 (WTG2)
15	05:39 20:34	06:09 20:02	06:40 19:12	17:58 (WTG1) 18:13 (WTG1)	07:12 18:21	06:49 16:42	15:02 (WTG2) 19 15:21 (WTG2)
16	05:40 20:34	06:10 20:01	06:41 19:10	17:57 (WTG1) 18:14 (WTG1)	07:13 18:20	06:50 16:41	15:02 (WTG2) 19 15:21 (WTG2)
17	05:41 20:33	06:11 19:59	06:42 19:09	17:55 (WTG1) 18:15 (WTG1)	07:14 18:18	06:51 16:40	15:04 (WTG2) 19 15:23 (WTG2)
18	05:41 20:33	06:12 19:58	06:43 19:07	17:54 (WTG1) 18:15 (WTG1)	07:15 18:17	06:53 16:39	15:05 (WTG2) 19 15:24 (WTG2)
19	05:42 20:32	06:13 19:56	06:44 19:05	17:53 (WTG1) 18:15 (WTG1)	07:17 18:15	06:54 16:38	15:05 (WTG2) 19 15:24 (WTG2)
20	05:43 20:31	06:14 19:55	06:45 19:04	17:53 (WTG1) 18:15 (WTG1)	07:18 18:14	06:55 16:38	15:06 (WTG2) 19 15:25 (WTG2)
21	05:44 20:30	06:15 19:53	06:46 19:02	17:52 (WTG1) 18:14 (WTG1)	07:19 18:12	06:56 16:37	15:08 (WTG2) 18 15:26 (WTG2)
22	05:45 20:30	06:16 19:52	06:47 19:00	17:52 (WTG1) 18:14 (WTG1)	07:20 18:11	06:57 16:36	15:08 (WTG2) 19 15:27 (WTG2)
23	05:46 20:29	06:17 19:50	06:48 18:58	17:52 (WTG1) 18:13 (WTG1)	07:21 18:09	06:59 16:36	15:09 (WTG2) 18 15:27 (WTG2)
24	05:47 20:28	06:18 19:49	06:50 18:57	17:53 (WTG1) 18:12 (WTG1)	07:22 18:08	07:00 16:35	15:10 (WTG2) 17 15:27 (WTG2)
25	05:48 20:27	06:19 19:47	06:51 18:55	17:53 (WTG1) 18:10 (WTG1)	06:24 17:06	07:01 16:35	15:12 (WTG2) 16 15:28 (WTG2)
26	05:49 20:26	06:20 19:46	06:52 18:53	17:55 (WTG1) 18:08 (WTG1)	06:25 17:05	07:02 16:34	15:12 (WTG2) 17 15:29 (WTG2)
27	05:50 20:25	06:21 19:44	06:53 18:51	17:57 (WTG1) 18:05 (WTG1)	06:26 17:04	07:03 16:34	15:13 (WTG2) 16 15:29 (WTG2)
28	05:50 20:24	06:22 19:42	06:54 18:50	17:57 (WTG1) 17:02	06:27 16:33	07:04 16:33	15:14 (WTG2) 15 15:29 (WTG2)
29	05:51 20:23	06:23 19:41	06:55 18:48	17:58 (WTG1) 17:01	06:28 16:33	07:05 16:33	15:15 (WTG2) 14 15:29 (WTG2)
30	05:52 20:22	06:24 19:39	06:56 18:46	17:59 (WTG1) 17:00	06:29 16:32	07:06 16:32	15:15 (WTG2) 15 15:30 (WTG2)
31	05:53 20:21	06:25 19:38		18:00 (WTG1) 16:58	06:31 16:58	07:07 16:40	15:16 (WTG2) 9 15:43 (WTG2)
Potential sun hours	461	429	375	345	297	286	
Total, worst case			250		360		284
Sun reduction			0,58		0,40		0,36
Oper. time red.			0,89		0,89		0,89
Wind dir. red.			0,55		0,58		0,58
Total reduction			0,29		0,21		0,19
Total, real			71		75		53

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 14 plla 193 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (62)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:16	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:14
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:34	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:22	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:26
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:39	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 14 plla 199 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (72)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:07
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:16	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:03	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:14
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:47	16:31
11	07:27	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:34	20:02	19:12	18:21	16:42	16:31
16	07:26	06:56	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:38	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:49	06:04	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:29	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:22	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:19	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:26
	17:08	17:47	18:19	19:53	20:23	20:39	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:39	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 15 plla 337 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:44	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:30
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:30
12	07:27	07:02	06:20	06:27	05:46	05:26	05:36	06:05	06:37	07:09	06:45	07:18
	16:51	17:29	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:05	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:34	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:19	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:15	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:12	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:03	18:14	16:37	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:35	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:46	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:50	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:03	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:39
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 15 plla 338 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:44	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:30
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:30
12	07:27	07:02	06:20	06:27	05:46	05:26	05:36	06:05	06:37	07:09	06:45	07:18
	16:51	17:29	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:05	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:34	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:19	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:15	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:12	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:03	18:14	16:37	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:35	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:46	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:50	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:03	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:39
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 15 plla 341 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:44	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:30
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:30
12	07:27	07:02	06:20	06:27	05:46	05:26	05:36	06:05	06:37	07:09	06:45	07:18
	16:51	17:29	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:05	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:34	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:19	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:15	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:12	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:03	18:14	16:37	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:35	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:50	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:03	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 15 plla 380 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Assumptions for shadow calculations
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	15:31 (WTG5) 15:57 (WTG5)	07:14 17:15	06:37 17:50	06:46 19:25	05:59 19:58	05:29 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:44	06:32 16:57
2	07:28 16:41	15:31 (WTG5) 15:57 (WTG5)	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56
3	07:28 16:42	15:32 (WTG5) 15:58 (WTG5)	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:28 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54
4	07:28 16:43	15:33 (WTG5) 15:58 (WTG5)	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53
5	07:28 16:44	15:33 (WTG5) 15:58 (WTG5)	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52
6	07:28 16:45	15:34 (WTG5) 15:59 (WTG5)	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:32 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51
7	07:28 16:46	15:35 (WTG5) 15:59 (WTG5)	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50
8	07:28 16:47	15:35 (WTG5) 15:59 (WTG5)	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49
9	07:28 16:48	15:36 (WTG5) 15:59 (WTG5)	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:34 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:47
10	07:28 16:49	15:37 (WTG5) 15:59 (WTG5)	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:35	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46
11	07:28 16:50	15:38 (WTG5) 16:00 (WTG5)	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45
12	07:27 16:51	15:38 (WTG5) 15:59 (WTG5)	07:02 17:29	06:20 18:03	06:27 19:37	05:46 20:10	05:26 20:36	05:36 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44
13	07:27 16:52	15:40 (WTG5) 15:59 (WTG5)	07:01 17:31	06:18 18:04	06:26 19:39	05:44 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:43
14	07:27 16:53	15:40 (WTG5) 15:58 (WTG5)	06:59 17:32	06:16 18:05	06:24 19:40	05:43 20:12	05:26 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:42
15	07:26 16:55	15:42 (WTG5) 15:58 (WTG5)	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42
16	07:26 16:56	15:43 (WTG5) 15:57 (WTG5)	06:57 17:34	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41
17	07:25 16:57	15:46 (WTG5) 15:56 (WTG5)	06:55 17:36	06:11 18:09	06:19 19:43	05:40 20:15	05:26 20:38	05:40 20:33	06:10 19:59	06:42 19:09	07:14 18:18	06:52 16:40
18	07:25 16:58	15:49 (WTG5) 15:52 (WTG5)	06:54 17:37	06:10 18:10	06:18 19:44	05:39 20:16	05:26 20:38	05:41 20:33	06:11 19:58	06:43 19:07	07:15 18:17	06:53 16:39
19	07:24 16:59	15:52 (WTG5) 17:38	06:52 18:11	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:12 19:56	06:44 19:05	07:17 18:15	06:54 16:38
20	07:24 17:00	17:39	18:12	06:06 19:46	06:15 20:18	05:38 20:39	05:26 20:39	05:43 20:31	06:13 19:55	06:45 19:03	18:14	06:55 16:37
21	07:23 17:02	06:50 17:41	18:13	06:04 19:47	06:13 20:19	05:37 20:39	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	18:12	06:56 16:37
22	07:23 17:03	06:48 17:42	18:14	06:03 19:48	06:12 20:20	05:36 20:39	05:26 20:39	05:45 20:30	06:16 19:52	06:47 19:00	18:11	06:57 16:36
23	07:22 17:04	06:47 17:43	18:16	06:01 19:49	06:10 20:21	05:35 20:39	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	18:09	06:59 16:35
24	07:21 17:05	06:45 17:44	18:17	05:59 19:51	06:09 20:22	05:34 20:39	05:27 20:39	05:46 20:28	06:18 19:49	06:49 18:57	18:08	07:00 16:35
25	07:20 17:07	06:44 17:46	18:18	05:58 19:52	06:07 20:23	05:34 20:40	05:27 20:40	05:47 20:27	06:19 19:47	06:50 18:55	18:06	07:01 16:34
26	07:20 17:08	06:42 17:47	18:19	05:56 19:53	06:06 20:23	05:33 20:40	05:28 20:40	05:48 20:26	06:20 19:46	06:52 18:53	17:05	07:02 16:34
27	07:19 17:09	06:41 17:48	18:19	05:54 19:54	06:04 20:24	05:32 20:40	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	17:03	07:03 16:33
28	07:18 17:10	06:39 17:49	18:20	05:52 19:55	06:03 20:25	05:32 20:40	05:28 20:40	05:50 20:24	06:22 19:43	06:54 18:50	17:02	07:04 16:33
29	07:17 17:12	06:37 17:47	18:21	05:51 19:56	06:02 20:26	05:31 20:40	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	17:01	07:05 16:32
30	07:16 17:13	06:35 17:45	18:22	05:50 19:57	06:01 20:27	05:30 20:40	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	17:00	07:07 16:32
31	07:15 17:14	06:33 17:43	18:23	05:49 19:58	06:00 20:28	05:29 20:40	05:29 20:40	05:53 20:21	06:25 19:38	06:57 18:45	16:59	07:08 16:32
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case	369										100	794
Sun reduction	0,44										0,40	0,36
Oper. time red.	0,89										0,89	0,89
Wind dir. red.	0,58										0,58	0,58
Total reduction	0,23										0,21	0,19
Total, real	84										21	149

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Last time (hh:mm) with flicker	(WTG causing flicker last time)
	Minutes with flicker		

SHADOW - Calendar

Shadow receptor: fg 22 plla 172 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (43)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:26	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 22 plla 172 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (44)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:26	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 22 plla 173 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 16:41	07:14 17:16	06:38 17:50	06:57 (WTG3) 07:11 (WTG3)	06:46 19:25	07:04 (WTG3) 19:58
2	07:28 16:42	07:13 17:17	06:36 17:52	06:55 (WTG3) 07:12 (WTG3)	06:44 19:27	07:06 (WTG3) 19:59
3	07:28 16:42	07:12 17:18	06:34 17:53	06:53 (WTG3) 07:13 (WTG3)	06:42 19:28	07:06 (WTG3) 20:00
4	07:28 16:43	07:11 17:19	06:33 17:54	06:52 (WTG3) 07:15 (WTG3)	06:41 19:29	07:07 (WTG3) 20:01
5	07:28 16:44	07:10 17:21	06:31 17:55	06:50 (WTG3) 07:15 (WTG3)	06:39 19:30	07:09 (WTG3) 20:03
6	07:28 16:45	07:09 17:22	06:30 17:56	06:49 (WTG3) 07:17 (WTG3)	06:37 19:31	07:09 (WTG3) 20:04
7	07:28 16:46	07:08 17:23	06:28 17:58	06:47 (WTG3) 07:17 (WTG3)	06:36 19:32	07:10 (WTG3) 20:05
8	07:28 16:47	07:07 17:24	06:26 17:59	06:45 (WTG3) 07:18 (WTG3)	06:34 19:33	07:13 (WTG3) 20:06
9	07:28 16:48	07:06 17:26	06:25 18:00	06:44 (WTG3) 07:19 (WTG3)	06:32 19:34	07:14 (WTG3) 20:07
10	07:28 16:49	07:04 17:27	06:23 18:01	06:42 (WTG3) 07:19 (WTG3)	06:31 19:35	07:16 (WTG3) 20:08
11	07:28 16:50	07:03 17:28	06:21 18:02	06:40 (WTG3) 07:19 (WTG3)	06:29 19:36	07:20 (WTG3) 20:09
12	07:27 16:51	07:02 17:30	06:20 18:03	06:39 (WTG3) 07:20 (WTG3)	06:28 19:37	07:24 (WTG3) 20:10
13	07:27 16:52	07:01 17:31	06:18 18:04	06:37 (WTG3) 07:20 (WTG3)	06:26 19:39	07:41 (WTG3) 20:11
14	07:27 16:54	06:59 17:32	06:16 18:06	06:35 (WTG3) 07:19 (WTG3)	06:24 19:40	05:44 20:12
15	07:26 16:55	06:58 17:33	06:15 18:07	06:34 (WTG3) 07:20 (WTG3)	06:23 19:41	05:43 20:13
16	07:26 16:56	06:57 17:35	06:13 18:08	06:32 (WTG3) 07:20 (WTG3)	06:21 19:42	05:42 20:14
17	07:25 16:57	06:55 17:36	06:11 18:09	06:30 (WTG3) 07:19 (WTG3)	06:20 19:43	05:41 20:15
18	07:25 16:58	06:54 17:37	06:10 18:10	06:28 (WTG3) 07:19 (WTG3)	06:18 19:44	05:40 20:16
19	07:24 16:59	06:52 17:38	06:08 18:11	06:27 (WTG3) 07:19 (WTG3)	06:16 19:45	05:39 20:17
20	07:24 17:01	06:51 17:40	06:06 18:12	06:25 (WTG3) 07:18 (WTG3)	06:15 19:46	05:38 20:18
21	07:23 17:02	06:50 17:41	06:05 18:13	06:23 (WTG3) 07:18 (WTG3)	06:13 19:47	05:37 20:19
22	07:23 17:03	06:48 17:42	06:03 18:14	06:22 (WTG3) 07:18 (WTG3)	06:12 19:48	05:36 20:20
23	07:22 17:04	06:47 17:43	06:01 18:16	06:20 (WTG3) 07:17 (WTG3)	06:10 19:50	05:35 20:21
24	07:21 17:05	06:45 17:44	05:59 18:17	06:18 (WTG3) 07:16 (WTG3)	06:09 19:51	05:35 20:22
25	07:20 17:07	06:44 17:46	05:58 18:18	06:16 (WTG3) 07:15 (WTG3)	06:07 19:52	05:34 20:23
26	07:20 17:08	06:42 17:47	05:56 18:19	06:15 (WTG3) 07:15 (WTG3)	06:06 19:53	05:33 20:23
27	07:19 17:09	06:41 17:48	05:54 18:20	06:13 (WTG3) 07:14 (WTG3)	06:05 19:54	05:32 20:24
28	07:18 17:10	06:39 17:49	05:53 18:21	06:11 (WTG3) 07:12 (WTG3)	06:03 19:55	05:32 20:25
29	07:17 17:12	06:38 17:50	05:51 19:22	06:10 (WTG3) 08:12 (WTG3)	06:02 19:56	05:31 20:26
30	07:16 17:13	06:37 17:51	05:50 19:23	06:09 (WTG3) 07:08 (WTG3)	06:01 19:57	05:30 20:27
31	07:15 17:14	06:36 17:52	05:49 19:24	06:08 (WTG3) 07:06 (WTG3)	06:00 19:58	05:29 20:28
Potential sun hours	296	296	369	399	450	454
Total, worst case			1383		548	
Sun reduction		0,46	0,44		0,48	
Oper. time red.		0,89	0,89		0,89	
Wind dir. red.		0,58	0,58		0,58	
Total reduction		0,24	0,23		0,25	
Total, real		5	316		136	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 22 plla 173 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30 20:40	05:54 20:20	06:26 19:36	07:19 (WTG3) 07:45 (WTG3)	06:57 18:45	07:17 (WTG3) 16:57
2	05:30 20:39	05:55 20:19	06:27 19:34	07:15 (WTG3) 07:48 (WTG3)	06:58 18:43	07:18 (WTG3) 16:56
3	05:31 20:39	05:56 20:18	06:28 19:33	07:12 (WTG3) 07:51 (WTG3)	06:59 18:41	07:19 (WTG3) 16:54
4	05:31 20:39	05:57 20:17	06:29 19:31	07:10 (WTG3) 07:53 (WTG3)	07:00 18:39	07:20 (WTG3) 16:53
5	05:32 20:39	05:58 20:15	06:30 19:29	07:08 (WTG3) 07:54 (WTG3)	07:01 18:38	07:21 (WTG3) 16:52
6	05:33 20:39	05:59 20:14	06:31 19:28	07:06 (WTG3) 07:56 (WTG3)	07:02 18:36	07:23 (WTG3) 16:51
7	05:33 20:38	06:00 20:13	06:32 19:26	07:04 (WTG3) 07:57 (WTG3)	07:03 18:34	07:24 (WTG3) 16:50
8	05:34 20:38	06:01 20:12	06:33 19:24	07:02 (WTG3) 07:58 (WTG3)	07:04 18:33	07:25 (WTG3) 16:49
9	05:35 20:38	06:02 20:10	06:34 19:23	07:00 (WTG3) 07:59 (WTG3)	07:05 18:31	07:26 (WTG3) 16:48
10	05:35 20:37	06:03 20:09	06:35 19:21	06:59 (WTG3) 08:00 (WTG3)	07:07 18:29	07:27 (WTG3) 16:47
11	05:36 20:37	06:04 20:08	06:36 19:19	06:58 (WTG3) 08:00 (WTG3)	07:08 18:28	07:28 (WTG3) 16:45
12	05:37 20:36	06:05 20:06	06:37 19:17	06:58 (WTG3) 08:01 (WTG3)	07:09 18:26	07:29 (WTG3) 16:44
13	05:37 20:36	06:06 20:05	06:38 19:16	06:59 (WTG3) 08:02 (WTG3)	07:10 18:25	07:30 (WTG3) 16:44
14	05:38 20:35	06:07 20:04	06:39 19:14	07:00 (WTG3) 08:02 (WTG3)	07:11 18:23	07:32 (WTG3) 16:43
15	05:39 20:35	06:08 20:02	06:40 19:12	07:01 (WTG3) 08:02 (WTG3)	07:12 18:21	07:33 (WTG3) 16:42
16	05:40 20:34	06:10 20:01	06:41 19:10	07:02 (WTG3) 08:03 (WTG3)	07:13 18:20	07:34 (WTG3) 16:41
17	05:41 20:33	06:11 19:59	06:42 19:09	07:03 (WTG3) 08:03 (WTG3)	07:14 18:18	06:51 16:40
18	05:41 20:33	06:12 19:58	06:43 19:07	07:04 (WTG3) 08:03 (WTG3)	07:16 18:17	06:53 16:39
19	05:42 20:32	06:13 19:56	06:44 19:05	07:05 (WTG3) 08:03 (WTG3)	07:17 18:15	06:54 16:38
20	05:43 20:31	06:14 19:55	06:45 19:04	07:06 (WTG3) 08:03 (WTG3)	07:18 18:14	06:55 16:38
21	05:44 20:30	06:15 19:53	06:46 19:02	07:07 (WTG3) 08:03 (WTG3)	07:19 18:12	06:56 16:37
22	05:45 20:30	06:16 19:52	06:47 19:00	07:08 (WTG3) 08:03 (WTG3)	07:20 18:11	06:57 16:36
23	05:46 20:29	06:17 19:50	06:48 18:58	07:09 (WTG3) 08:03 (WTG3)	07:21 18:09	06:59 16:36
24	05:47 20:28	06:18 19:49	06:50 18:57	07:10 (WTG3) 08:02 (WTG3)	07:22 18:08	07:00 16:35
25	05:48 20:27	06:19 19:47	06:51 18:55	07:11 (WTG3) 08:02 (WTG3)	06:24 17:06	07:01 16:34
26	05:49 20:26	06:20 19:46	06:52 18:53	07:12 (WTG3) 08:02 (WTG3)	06:25 17:05	07:02 16:34
27	05:49 20:25	06:21 19:44	06:53 18:51	07:13 (WTG3) 08:01 (WTG3)	06:26 17:04	07:03 16:33
28	05:50 20:24	06:22 19:43	06:54 18:50	07:14 (WTG3) 08:01 (WTG3)	06:27 17:02	07:04 16:33
29	05:51 20:23	06:23 19:41	06:55 18:48	07:15 (WTG3) 08:00 (WTG3)	06:28 17:01	07:05 16:33
30	05:52 20:22	06:24 19:39	06:56 18:46	07:16 (WTG3) 07:59 (WTG3)	06:30 17:00	07:07 16:32
31	05:53 20:21	06:25 19:38	07:23 (WTG3) 07:41 (WTG3)		06:31 16:58	07:28 16:40
Potential sun hours	461	429	375	345	296	286
Total, worst case		18	1573		388	
Sun reduction		0,67	0,58		0,44	
Oper. time red.		0,89	0,89		0,89	
Wind dir. red.		0,58	0,58		0,58	
Total reduction		0,35	0,30		0,23	
Total, real		6	473		88	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 22 plla 181 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 16:41	07:14 17:16	07:38 (WTG3) 07:53 (WTG3)	06:38 17:50	06:46 19:25	05:59 19:58
2	07:28 16:42	07:13 17:17	07:40 (WTG3) 07:54 (WTG3)	06:36 17:52	06:44 19:27	05:58 19:59
3	07:28 16:42	07:12 17:18	07:40 (WTG3) 07:53 (WTG3)	06:34 17:53	06:42 19:28	05:56 20:00
4	07:28 16:43	07:11 17:19	07:42 (WTG3) 07:54 (WTG3)	06:33 17:54	06:41 19:29	05:55 20:01
5	07:28 16:44	07:10 17:21	07:43 (WTG3) 07:54 (WTG3)	06:31 17:55	06:39 19:30	05:54 20:03
6	07:28 16:45	07:09 17:22	07:45 (WTG3) 07:55 (WTG3)	06:30 17:56	06:37 19:31	05:53 20:04
7	07:28 16:46	07:08 17:23	07:46 (WTG3) 07:55 (WTG3)	06:28 17:58	06:36 19:32	05:51 20:05
8	07:28 16:47	07:07 17:25	07:48 (WTG3) 07:56 (WTG3)	06:26 17:59	06:34 19:33	05:50 20:06
9	07:28 16:48	07:06 17:26	07:48 (WTG3) 07:55 (WTG3)	06:25 18:00	06:32 19:34	05:49 20:07
10	07:28 16:49	07:04 17:27	07:50 (WTG3) 07:55 (WTG3)	06:23 18:01	06:31 19:35	05:48 20:08
11	07:28 16:50	07:03 17:28	07:51 (WTG3) 07:56 (WTG3)	06:21 18:02	06:29 19:36	05:47 20:09
12	07:27 16:51	07:02 17:30	07:53 (WTG3) 07:56 (WTG3)	06:20 18:03	06:28 19:38	05:46 20:10
13	07:27 16:52	07:01 17:31	07:54 (WTG3) 07:55 (WTG3)	06:18 18:04	06:26 19:39	05:45 20:11
14	07:27 16:54	06:59 17:32	07:55 (WTG3) 18:06	06:16 19:40	06:24 20:12	05:44 20:37
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:26 20:39
22	07:23 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39
23	07:22 17:04	07:43 (WTG3) 07:44 (WTG3)	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21
24	07:21 17:05	07:42 (WTG3) 07:46 (WTG3)	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22
25	07:20 17:07	07:41 (WTG3) 07:46 (WTG3)	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23
26	07:20 17:08	07:40 (WTG3) 07:47 (WTG3)	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23
27	07:19 17:09	07:39 (WTG3) 07:48 (WTG3)	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24
28	07:18 17:10	07:39 (WTG3) 07:50 (WTG3)	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25
29	07:17 17:12	07:38 (WTG3) 07:51 (WTG3)	06:38 17:49	06:51 19:22	06:02 19:56	05:31 20:26
30	07:16 17:13	07:37 (WTG3) 07:52 (WTG3)	06:37 17:49	06:49 19:23	06:00 19:57	05:31 20:27
31	07:15 17:14	07:37 (WTG3) 07:52 (WTG3)	06:47 17:49	06:47 19:24	05:30 20:28	05:29 20:40
Potential sun hours	296	296	369	399	450	454
Total, worst case	80	113				
Sun reduction	0,44	0,46				
Oper. time red.	0,89	0,89				
Wind dir. red.	0,62	0,62				
Total reduction	0,24	0,25				
Total, real	19	28				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 22 plla 181 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:19 (WTG3) 16:32
2	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	6 06:33	07:18 (WTG3) 16:32
3	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	7 06:34	07:16 (WTG3) 16:31
4	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	9 06:36	07:25 (WTG3) 16:31
5	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	9 06:37	07:14 (WTG3) 16:31
6	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	11 06:38	07:25 (WTG3) 16:31
7	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	11 06:39	07:13 (WTG3) 16:31
8	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	13 06:41	07:24 (WTG3) 16:31
9	05:35 20:38	06:02 20:10	06:34 19:23	07:05 18:31	13 06:42	07:10 (WTG3) 16:31
10	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	14 06:43	07:24 (WTG3) 16:31
11	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	15 06:44	07:09 (WTG3) 16:31
12	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	15 06:45	07:08 (WTG3) 16:31
13	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	15 06:47	07:23 (WTG3) 16:31
14	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	13 06:44	07:11 (WTG3) 16:31
15	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	11 06:43	07:22 (WTG3) 16:31
16	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	9 06:42	07:12 (WTG3) 16:31
17	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	7 06:41	07:13 (WTG3) 16:32
18	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	5 06:40	07:16 (WTG3) 16:32
19	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	3 06:39	07:19 (WTG3) 16:32
20	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	1 06:38	07:17 (WTG3) 16:32
21	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12		07:18 (WTG3) 16:32
22	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11		16:33
23	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09		16:34
24	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08		16:34
25	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06		16:35
26	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05		16:36
27	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04		16:36
28	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02		16:37
29	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:23 (WTG3) 2	16:37 16:38
30	05:52 20:22	06:24 19:39	06:56 18:46	07:30 17:00	07:25 (WTG3) 3	16:38 16:39
31	05:53 20:21	06:25 19:38	06:57 16:58	07:31 07:25 (WTG3)	07:26 (WTG3) 4	16:39 16:40
Potential sun hours	461	429	375	345	296	286
Total, worst case				9		187
Sun reduction				0,44		0,40
Oper. time red.				0,89		0,89
Wind dir. red.				0,62		0,62
Total reduction				0,24		0,22
Total, real				2		42

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 23 plla 508 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:05	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 26 plla 203 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (66)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:26	07:05 (WTG2) 17 07:22 (WTG2)	05:59 19:58	06:42 (WTG2) 40 07:22 (WTG2)	05:30 20:28
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	07:03 (WTG2) 21 07:24 (WTG2)	05:58 19:59	06:43 (WTG2) 37 07:20 (WTG2)	05:29 20:29
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	07:01 (WTG2) 25 07:26 (WTG2)	05:57 20:00	06:44 (WTG2) 35 07:19 (WTG2)	05:29 20:30
4	07:28 16:44	07:11 17:20	06:33 17:54	06:41 19:29	06:59 (WTG2) 28 07:27 (WTG2)	05:55 20:01	06:46 (WTG2) 31 07:17 (WTG2)	05:28 20:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	06:58 (WTG2) 31 07:29 (WTG2)	05:54 20:03	06:47 (WTG2) 29 07:16 (WTG2)	05:28 20:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	06:56 (WTG2) 34 07:30 (WTG2)	05:53 20:04	06:49 (WTG2) 25 07:14 (WTG2)	05:28 20:32
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	06:54 (WTG2) 36 07:30 (WTG2)	05:52 20:05	06:51 (WTG2) 19 07:10 (WTG2)	05:27 20:33
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	06:53 (WTG2) 38 07:31 (WTG2)	05:50 20:06	06:55 (WTG2) 12 07:07 (WTG2)	05:27 20:33
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	06:51 (WTG2) 40 07:31 (WTG2)	05:49 20:07		05:27 20:34
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	06:50 (WTG2) 42 07:32 (WTG2)	05:48 20:08		05:27 20:34
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	06:48 (WTG2) 44 07:32 (WTG2)	05:47 20:09		05:27 20:35
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	06:46 (WTG2) 46 07:32 (WTG2)	05:46 20:10		05:26 20:35
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	06:45 (WTG2) 48 07:33 (WTG2)	05:45 20:11		05:26 20:36
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	06:43 (WTG2) 49 07:32 (WTG2)	05:44 20:12		05:26 20:36
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	06:42 (WTG2) 51 07:33 (WTG2)	05:43 20:13		05:26 20:37
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	06:40 (WTG2) 52 07:32 (WTG2)	05:42 20:14		05:26 20:37
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	06:39 (WTG2) 54 07:33 (WTG2)	05:41 20:15		05:26 20:38
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	06:38 (WTG2) 54 07:32 (WTG2)	05:40 20:16		05:26 20:38
19	07:24 17:00	06:52 17:38	06:08 18:11	06:17 19:45	06:38 (WTG2) 54 07:32 (WTG2)	05:39 20:17		05:26 20:38
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	06:37 (WTG2) 54 07:31 (WTG2)	05:38 20:18		05:27 20:39
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	06:38 (WTG2) 53 07:31 (WTG2)	05:37 20:19		05:27 20:39
22	07:22 17:03	06:48 17:42	06:03 18:15	06:12 19:48	06:37 (WTG2) 53 07:30 (WTG2)	05:36 20:20		05:27 20:39
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	06:38 (WTG2) 52 07:30 (WTG2)	05:35 20:21		05:27 20:39
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	06:38 (WTG2) 51 07:29 (WTG2)	05:35 20:22		05:27 20:39
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	06:38 (WTG2) 50 07:28 (WTG2)	05:34 20:23		05:28 20:39
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	06:38 (WTG2) 49 07:27 (WTG2)	05:33 20:23		05:28 20:40
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	06:39 (WTG2) 47 07:26 (WTG2)	05:33 20:24		05:28 20:40
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	06:40 (WTG2) 46 07:26 (WTG2)	05:32 20:25		05:29 20:40
29	07:17 17:12		06:51 19:22	06:02 19:56	06:40 (WTG2) 44 07:24 (WTG2)	05:31 20:26		05:29 20:40
30	07:16 17:13		06:49 19:23	06:01 19:57	06:41 (WTG2) 42 07:23 (WTG2)	05:31 20:27		05:30 20:40
31	07:15 17:14		06:48 19:24	07:06 (WTG2) 07:18 (WTG2)		05:30 20:28		
Potential sun hours	296	296	369	399	450		454	
Total, worst case			12	1305		228		
Sun reduction			0,44	0,48		0,47		
Oper. time red.			0,89	0,89		0,89		
Wind dir. red.			0,56	0,56		0,56		
Total reduction			0,22	0,24		0,23		
Total, real			3	309		52		

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 26 plla 203 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (66)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30 20:39	05:54 20:20	06:26 19:36	06:47 (WTG2) 07:31 (WTG2)	06:57 18:45	07:08 16:32
2	05:31 20:39	05:55 20:19	06:27 19:34	06:48 (WTG2) 07:30 (WTG2)	06:58 18:43	07:09 16:32
3	05:31 20:39	05:56 20:18	06:28 19:33	06:49 (WTG2) 07:29 (WTG2)	06:59 18:41	07:10 16:31
4	05:32 20:39	05:57 20:17	06:29 19:31	06:50 (WTG2) 07:28 (WTG2)	07:00 18:40	07:11 16:31
5	05:32 20:39	05:58 20:15	06:30 19:29	06:51 (WTG2) 07:27 (WTG2)	07:01 18:38	07:12 16:31
6	05:33 20:38	05:59 20:14	06:31 19:28	06:52 (WTG2) 07:26 (WTG2)	07:02 18:36	07:13 16:31
7	05:33 20:38	06:00 20:13	06:32 19:26	06:53 (WTG2) 07:24 (WTG2)	07:03 18:35	07:14 16:31
8	05:34 20:38	06:01 20:12	06:33 19:24	06:54 (WTG2) 07:22 (WTG2)	07:04 18:33	07:15 16:31
9	05:35 20:37	06:02 20:10	06:34 19:23	06:55 (WTG2) 07:20 (WTG2)	07:06 18:31	07:15 16:31
10	05:35 20:37	06:04 20:09	06:35 19:21	06:56 (WTG2) 07:18 (WTG2)	07:07 18:30	07:16 16:31
11	05:36 20:37	06:05 20:08	06:36 19:19	06:57 (WTG2) 07:15 (WTG2)	07:08 18:28	07:17 16:31
12	05:37 20:36	06:06 20:06	06:37 19:17	06:58 (WTG2) 07:10 (WTG2)	07:09 18:26	07:18 16:31
13	05:38 20:36	06:07 20:05	06:38 19:16	07:10 (WTG2) 07:31 (WTG2)	07:10 18:25	07:19 16:31
14	05:38 20:35	06:08 20:04	06:39 19:14	07:11 (WTG2) 07:32 (WTG2)	07:11 18:23	07:20 16:31
15	05:39 20:35	06:09 20:02	06:40 19:12	07:12 (WTG2) 07:33 (WTG2)	07:12 18:22	07:20 16:31
16	05:40 20:34	06:10 20:01	06:41 19:11	07:13 (WTG2) 07:33 (WTG2)	07:13 18:20	07:21 16:32
17	05:41 20:33	06:11 19:59	06:42 19:09	07:14 (WTG2) 07:34 (WTG2)	07:14 18:18	07:22 16:32
18	05:42 20:33	06:12 19:58	06:43 19:07	07:16 (WTG2) 07:34 (WTG2)	07:16 18:17	07:22 16:32
19	05:42 20:32	06:13 19:56	06:44 19:05	07:17 (WTG2) 07:34 (WTG2)	07:17 18:15	07:23 16:33
20	05:43 20:31	06:14 19:55	06:45 19:04	07:18 (WTG2) 07:35 (WTG2)	07:18 18:14	07:24 16:33
21	05:44 20:30	06:15 19:53	06:46 19:02	07:19 (WTG2) 07:35 (WTG2)	07:19 18:12	07:24 16:34
22	05:45 20:30	06:16 19:52	06:48 19:00	07:20 (WTG2) 07:35 (WTG2)	07:20 18:11	07:25 16:34
23	05:46 20:29	06:17 19:50	06:49 18:58	07:21 (WTG2) 07:35 (WTG2)	07:21 18:09	07:25 16:35
24	05:47 20:28	06:18 19:49	06:50 18:57	07:22 (WTG2) 07:35 (WTG2)	07:22 18:08	07:26 16:35
25	05:48 20:27	06:19 19:47	06:51 18:55	07:24 (WTG2) 07:35 (WTG2)	07:24 17:07	07:26 16:36
26	05:49 20:26	06:20 19:46	06:52 18:53	07:25 (WTG2) 07:35 (WTG2)	07:25 17:05	07:27 16:36
27	05:50 20:25	06:21 19:44	06:53 18:51	07:26 (WTG2) 07:34 (WTG2)	07:26 17:04	07:27 16:37
28	05:51 20:24	06:22 19:43	06:54 18:50	07:27 (WTG2) 07:34 (WTG2)	07:27 17:02	07:27 16:38
29	05:52 20:23	06:23 19:41	06:55 18:48	07:28 (WTG2) 07:33 (WTG2)	07:28 17:01	07:27 16:38
30	05:53 20:22	06:24 19:39	06:56 18:46	07:29 (WTG2) 07:33 (WTG2)	07:29 17:00	07:28 16:39
31	05:53 20:21	06:25 19:38	06:46 (WTG2) 07:32 (WTG2)		06:31 16:58	07:28 16:40
Potential sun hours	461	429	375	345	297	286
Total, worst case		1195	370			
Sun reduction		0,67	0,58			
Oper. time red.		0,89	0,89			
Wind dir. red.		0,56	0,56			
Total reduction		0,33	0,29			
Total, real		394	106			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 26 plla 205 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (67)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:26	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:31	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:43	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:44	17:20	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:38	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:35	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:04	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:27	05:36	06:05	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:06	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:38	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:22	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:42	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	17:00	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:39	16:33
20	07:24	06:51	06:06	06:15	05:38	05:27	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:34
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:48	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:35
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:07	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:52	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:30	05:53	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 27 plla 196 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (48)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 27 plla 73 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (46)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:42 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:28 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:08 16:32	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 27 plla 73 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:42 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12		06:51 19:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:28 16:38
30	07:16 17:13		06:49 19:23	06:01 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14		06:48 19:24		05:30 20:28		05:53 20:21	06:25 19:38		06:31 16:58		07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 28 plla 326 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 28 plla 327 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 16:41	07:14 17:16	06:38 17:50	06:57 (WTG3) 07:05 (WTG3)	06:46 19:25	05:59 19:58
2	07:28 16:42	07:13 17:17	06:36 17:52	06:55 (WTG3) 07:05 (WTG3)	06:44 19:27	05:58 19:59
3	07:28 16:42	07:12 17:18	06:34 17:53	06:53 (WTG3) 07:06 (WTG3)	06:42 19:28	05:56 20:00
4	07:28 16:43	07:11 17:19	06:33 17:54	06:52 (WTG3) 07:06 (WTG3)	06:41 19:29	05:55 20:01
5	07:28 16:44	07:10 17:21	06:31 17:55	06:50 (WTG3) 07:06 (WTG3)	06:39 19:30	05:54 20:03
6	07:28 16:45	07:09 17:22	06:30 17:56	06:49 (WTG3) 07:07 (WTG3)	06:37 19:31	05:53 20:04
7	07:28 16:46	07:08 17:23	06:28 17:58	06:47 (WTG3) 07:07 (WTG3)	06:36 19:32	05:51 20:05
8	07:28 16:47	07:07 17:25	06:26 17:59	06:45 (WTG3) 07:06 (WTG3)	06:34 19:33	05:50 20:06
9	07:28 16:48	07:06 17:26	06:25 18:00	06:44 (WTG3) 07:07 (WTG3)	06:32 19:34	05:49 20:07
10	07:28 16:49	07:04 17:27	06:23 18:01	06:42 (WTG3) 07:06 (WTG3)	06:31 19:35	05:48 20:08
11	07:28 16:50	07:03 17:28	06:21 18:02	06:40 (WTG3) 07:06 (WTG3)	06:29 19:36	05:47 20:09
12	07:27 16:51	07:02 17:30	06:20 18:03	06:39 (WTG3) 07:06 (WTG3)	06:28 19:38	05:46 20:10
13	07:27 16:53	07:01 17:31	06:18 18:04	06:37 (WTG3) 07:05 (WTG3)	06:26 19:39	05:45 20:11
14	07:27 16:54	06:59 17:32	06:16 18:06	06:35 (WTG3) 07:04 (WTG3)	06:24 19:40	05:44 20:12
15	07:26 16:55	06:58 17:33	06:15 18:07	06:34 (WTG3) 07:04 (WTG3)	06:23 19:41	05:43 20:13
16	07:26 16:56	06:57 17:35	06:13 18:08	06:32 (WTG3) 07:03 (WTG3)	06:21 19:42	05:42 20:14
17	07:25 16:57	06:55 17:36	06:11 18:09	06:30 (WTG3) 07:01 (WTG3)	06:20 19:43	05:41 20:15
18	07:25 16:58	06:54 17:37	06:10 18:10	06:28 (WTG3) 07:00 (WTG3)	06:18 19:44	05:40 20:16
19	07:24 16:59	06:52 17:38	06:08 18:11	06:27 (WTG3) 06:59 (WTG3)	06:16 19:45	05:39 20:17
20	07:24 17:01	06:51 17:40	06:06 18:12	06:25 (WTG3) 06:58 (WTG3)	06:15 19:46	05:38 20:18
21	07:23 17:02	06:50 17:41	06:05 18:13	06:23 (WTG3) 06:56 (WTG3)	06:13 19:47	05:37 20:19
22	07:23 17:03	06:48 17:42	06:03 18:14	06:22 (WTG3) 06:55 (WTG3)	06:12 19:48	05:36 20:20
23	07:22 17:04	06:47 17:43	06:01 18:16	06:20 (WTG3) 06:52 (WTG3)	06:10 19:50	05:35 20:21
24	07:21 17:05	06:45 17:44	05:59 18:17	06:18 (WTG3) 06:50 (WTG3)	06:09 19:51	05:35 20:22
25	07:20 17:07	06:44 17:46	05:58 18:18	06:20 (WTG3) 06:47 (WTG3)	06:08 19:52	05:34 20:23
26	07:20 17:08	06:42 17:47	07:01 (WTG3) 07:02 (WTG3)	05:56 18:19	06:23 (WTG3) 06:44 (WTG3)	06:06 19:53
27	07:19 17:09	06:41 17:48	07:00 (WTG3) 07:04 (WTG3)	05:54 18:20	06:28 (WTG3) 06:38 (WTG3)	06:05 19:54
28	07:18 17:10	06:39 17:49	06:58 (WTG3) 07:04 (WTG3)	05:53 18:21	06:03 19:55	05:32 20:25
29	07:17 17:12		06:51 19:22	06:51 19:22	06:02 19:56	05:31 20:26
30	07:16 17:13		06:49 19:23	06:49 19:23	06:00 19:57	05:29 20:27
31	07:15 17:14		06:47 19:24	06:47 19:24	05:30 20:28	05:29 20:40
Potential sun hours	296	296	369	399	450	454
Total, worst case			654			
Sun reduction		11	0,46	0,44		
Oper. time red.		0,89	0,89	0,89		
Wind dir. red.		0,59	0,59	0,59		
Total reduction		0,24	0,23	0,23		
Total, real		3	150			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 28 plla 327 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Assumptions for shadow calculations
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December	
1	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	07:17 (WTG3) 27 07:44 (WTG3)	06:32 16:57	07:08 16:32
2	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	07:18 (WTG3) 26 07:44 (WTG3)	06:33 16:56	07:09 16:32
3	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	07:19 (WTG3) 25 07:44 (WTG3)	06:34 16:54	07:10 16:31
4	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	07:20 (WTG3) 23 07:43 (WTG3)	06:36 16:53	07:11 16:31
5	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	07:21 (WTG3) 22 07:43 (WTG3)	06:37 16:52	07:12 16:31
6	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	07:23 (WTG3) 21 07:44 (WTG3)	06:38 16:51	07:13 16:31
7	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	07:24 (WTG3) 19 07:43 (WTG3)	06:39 16:50	07:14 16:31
8	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	07:25 (WTG3) 17 07:42 (WTG3)	06:41 16:49	07:15 16:31
9	05:35 20:38	06:02 20:10	06:34 19:23	07:05 18:31	07:26 (WTG3) 15 07:41 (WTG3)	06:42 16:48	07:15 16:31
10	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	07:27 (WTG3) 14 07:41 (WTG3)	06:43 16:47	07:16 16:31
11	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	07:28 (WTG3) 12 07:40 (WTG3)	06:44 16:45	07:17 16:31
12	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	07:29 (WTG3) 10 07:39 (WTG3)	06:45 16:44	07:18 16:31
13	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	07:30 (WTG3) 7 07:37 (WTG3)	06:47 16:44	07:19 16:31
14	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	07:32 (WTG3) 5 07:37 (WTG3)	06:48 16:43	07:20 16:31
15	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	07:33 (WTG3) 3 07:36 (WTG3)	06:49 16:42	07:20 16:31
16	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	07:34 (WTG3) 5 07:25 (WTG3)	06:50 16:41	07:21 16:32
17	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	07:12 (WTG3) 19 07:31 (WTG3)	06:51 16:40	07:22 16:32
18	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	07:09 (WTG3) 25 07:34 (WTG3)	06:53 16:39	07:22 16:32
19	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	07:06 (WTG3) 31 07:37 (WTG3)	06:54 16:38	07:23 16:32
20	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	07:06 (WTG3) 32 07:38 (WTG3)	06:55 16:38	07:24 16:33
21	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	07:07 (WTG3) 33 07:40 (WTG3)	06:56 16:37	07:24 16:33
22	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	07:08 (WTG3) 33 07:41 (WTG3)	06:57 16:36	07:25 16:34
23	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	07:09 (WTG3) 33 07:42 (WTG3)	06:59 16:36	07:25 16:34
24	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:10 (WTG3) 32 07:42 (WTG3)	07:00 16:35	07:26 16:35
25	05:48 20:27	06:19 19:47	06:51 18:55	07:23 18:06	07:11 (WTG3) 32 07:43 (WTG3)	07:01 16:34	07:26 16:35
26	05:49 20:26	06:20 19:46	06:52 18:53	07:24 18:05	07:12 (WTG3) 32 07:44 (WTG3)	07:02 16:34	07:27 16:36
27	05:49 20:25	06:21 19:44	06:53 18:51	07:25 18:04	07:13 (WTG3) 31 07:44 (WTG3)	07:03 16:33	07:27 16:37
28	05:50 20:24	06:22 19:43	06:54 18:50	07:26 18:02	07:14 (WTG3) 30 07:44 (WTG3)	07:04 16:33	07:27 16:37
29	05:51 20:23	06:23 19:41	06:55 18:48	07:27 18:01	07:15 (WTG3) 29 07:44 (WTG3)	07:05 16:33	07:28 16:38
30	05:52 20:22	06:24 19:39	06:56 18:46	07:28 18:00	07:16 (WTG3) 28 07:44 (WTG3)	07:07 16:32	07:28 16:39
31	05:53 20:21	06:25 19:38		06:31 16:58			07:28 16:40
Potential sun hours	461	429	375	345	296	286	
Total, worst case			425	246			
Sun reduction			0,58	0,44			
Oper. time red.			0,89	0,89			
Wind dir. red.			0,59	0,59			
Total reduction			0,30	0,23			
Total, real			128	56			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 28 plla 342 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (36)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:37 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:49	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:49	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:36 17:49	05:50 18:24	06:00 19:58	05:29 20:28	05:29 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:07 16:32	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------



SHADOW - Calendar

Shadow receptor: fg 28 plla 345 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (49)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:27 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:48	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:47	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:36 17:46	05:50 18:24	06:00 19:58	05:29 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:08 16:32	07:29 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 28 plla 346 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (45)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:35	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:28 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:08 16:32	07:29 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 29 plla 325 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:05	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 29 plla 325 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:37 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:35	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:00 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:43	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:05	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:48 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:42	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:50	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:51	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:36 17:52	05:50 18:24	06:00 19:58	05:29 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:07 16:32	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 29 plla 325 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (35)
 Assumptions for shadow calculations
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:37 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:35	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:00 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:43	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:48 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:42	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:48	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:47	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:36 17:46	05:50 18:24	06:00 19:58	05:29 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 16:59	07:07 16:58	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 29 plla 335 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (32)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:39	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 29 plla 35 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (38)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:37 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:38	05:59 20:14	06:31 19:28	06:31 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:39	05:48 20:27	06:19 19:47	06:51 18:55	06:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	06:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	06:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	06:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:48	05:52 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	06:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:37 17:47	05:51 18:23	06:01 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	06:30 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:36 17:46	05:50 18:24	06:00 19:58	05:29 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:57 18:45	06:31 16:58	07:07 16:40	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Sun set (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	(WTG causing flicker first time)	(WTG causing flicker last time)
--------------	------------------	-----------------	----------------------	---------------------------------	--------------------------------	----------------------------------	---------------------------------

SHADOW - Calendar

Shadow receptor: fg 29 plla 36 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (37)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:37 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:15 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:37	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:15 18:17	06:53 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:04 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:22 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:49 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:51 19:22	06:02 19:56	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:49 19:23	06:00 19:57	06:00 19:57	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:47 19:24	06:00 19:58	06:00 19:58	05:30 20:28	05:28 20:40	05:53 20:21	06:25 19:38	06:31 18:58	07:30 16:58	07:07 16:40	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 3 plla 236 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (50)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:26	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:02	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:06	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:38	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:22	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	17:00	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:48	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:30	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)		First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)	Minutes with flicker	Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 36 plla 209 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (65)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:31 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:44	07:11 17:20	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:35	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:14 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:04 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:51	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:27 20:35	05:36 20:37	06:05 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:35	05:37 20:36	06:06 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:38 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:34	06:09 20:02	06:40 19:12	07:12 18:22	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:42 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 17:00	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:39	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:27 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:34
22	07:22 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:35
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:07	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:26 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12		06:51 19:22	06:02 19:56	05:31 20:26	05:29 20:40	05:52 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13		06:49 19:23	06:01 19:57	05:31 20:27	05:30 20:40	05:53 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14		06:48 19:24		05:30 20:28		05:53 20:21	06:25 19:38	06:31 16:58			07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 36 plla 211 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (64)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:31 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:44	07:11 17:20	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:02	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:38	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:35	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:40 16:49	07:14 16:31
9	07:28 16:48	07:05 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:37	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:04 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:51	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:27 20:35	05:36 20:37	06:05 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:35	05:37 20:36	06:06 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:38 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:34	06:09 20:02	06:40 19:12	07:12 18:22	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:42 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 17:00	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	06:54 16:39	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:27 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:34
22	07:22 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:49	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:35
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:22	05:28 20:39	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:07	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:26 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:52 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:27 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:01 19:57	05:31 20:27	05:30 20:40	05:53 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:06 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:48 18:24	06:00 19:58	05:30 20:28	05:30 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:30 17:00	07:07 16:32	07:29 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 37 plla 368 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (63)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:37	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:07
	16:41	17:16	17:51	19:25	19:58	20:28	20:39	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:31	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:44	17:19	17:54	19:29	20:01	20:31	20:39	20:16	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:02	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:38	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:40	07:14
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:05	06:25	06:32	05:49	05:27	05:35	06:02	06:34	07:05	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:37	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:27	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:06	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:37	20:10	20:35	20:36	20:06	19:17	18:26	16:45	16:31
13	07:27	07:00	06:18	06:26	05:45	05:26	05:38	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:34	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:51	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:42	06:12	06:43	07:15	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	17:00	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:39	16:33
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:38	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:22	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:49	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:35	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:22	20:39	20:27	19:47	18:55	17:06	16:35	16:36
26	07:19	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:26
	17:08	17:47	18:19	19:53	20:23	20:39	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:42	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:52	06:23	06:55	06:28	07:05	07:27
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:30	05:52	06:24	06:56	06:30	07:06	07:28
	17:13		19:23	19:57	20:27	20:39	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Monacilioni

SHADOW - Calendar

Shadow receptor: fg 4 plla 156 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (25)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:26	05:59 19:58	05:30 20:29	05:51 (WTGS) 20:40	05:53 (WTGS) 20:20	05:54 20:20	06:26 18:45	06:57 16:57	06:32 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:51 (WTGS) 20:39	05:53 (WTGS) 20:19	05:55 19:34	06:27 18:43	06:58 16:56	06:33 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:50 (WTGS) 20:39	05:54 (WTGS) 20:18	05:56 20:18	06:28 19:33	06:59 18:41	06:35 16:54
4	07:29 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:02	05:28 20:31	05:50 (WTGS) 20:39	05:54 (WTGS) 20:17	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53
5	07:29 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:50 (WTGS) 20:39	05:55 (WTGS) 20:15	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:50 (WTGS) 20:39	05:55 (WTGS) 20:14	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:51 20:05	05:27 20:33	05:49 (WTGS) 20:38	05:56 (WTGS) 20:13	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:49 (WTGS) 20:38	05:57 (WTGS) 20:12	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:49 (WTGS) 20:38	05:57 (WTGS) 20:10	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:35	05:49 (WTGS) 20:37	05:58 (WTGS) 20:09	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:47
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:49 (WTGS) 20:37	05:59 (WTGS) 20:08	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:49 (WTGS) 20:36	06:00 (WTGS) 20:06	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:48 (WTGS) 20:36	06:00 (WTGS) 20:05	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:37	05:48 (WTGS) 20:35	06:01 (WTGS) 20:04	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:48 (WTGS) 20:35	06:02 (WTGS) 20:02	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:49 (WTGS) 20:34	06:03 (WTGS) 20:01	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:49 (WTGS) 20:33	06:04 (WTGS) 20:00	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:49 (WTGS) 20:33	06:05 (WTGS) 20:00	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:49 (WTGS) 20:32	06:06 (WTGS) 20:00	06:13 19:57	06:44 19:05	07:17 18:15	06:54 16:38
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:49 (WTGS) 20:31	06:07 (WTGS) 20:00	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:49 (WTGS) 20:31	06:08 (WTGS) 20:00	06:15 19:54	06:46 19:02	07:19 18:12	06:56 16:37
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:49 (WTGS) 20:30	06:09 (WTGS) 20:00	06:16 19:52	06:47 19:00	07:20 18:11	06:57 16:36
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:50 (WTGS) 20:29	06:10 (WTGS) 20:00	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:40	05:50 (WTGS) 20:28	06:11 (WTGS) 20:00	06:18 19:49	06:50 18:57	07:23 18:08	06:56 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:40	05:50 (WTGS) 20:27	06:12 (WTGS) 20:00	06:19 19:47	06:51 18:55	06:24 17:06	07:01 16:34
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:24	05:28 20:40	05:51 (WTGS) 20:26	06:13 (WTGS) 20:00	06:20 19:46	06:52 18:53	06:25 17:05	07:02 16:34
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:51 (WTGS) 20:25	06:14 (WTGS) 20:00	06:21 19:44	06:53 18:51	06:26 17:04	07:03 16:33
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:28 20:40	05:51 (WTGS) 20:24	06:15 (WTGS) 20:00	06:22 19:43	06:54 18:50	06:27 17:02	07:04 16:33
29	07:17 17:12	06:31 17:52	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:52 (WTGS) 20:23	06:16 (WTGS) 20:00	06:23 19:41	06:55 18:48	06:28 17:01	07:06 16:33
30	07:16 17:13	06:49 18:23	06:00 19:23	06:00 19:57	05:31 20:27	05:29 20:40	05:52 (WTGS) 20:22	06:17 (WTGS) 20:00	06:24 19:39	06:56 18:46	06:30 17:00	07:07 16:32
31	07:15 17:14	06:48 19:24	06:48 19:24	06:48 19:24	05:30 20:28	05:28 20:40	05:53 (WTGS) 20:21	06:18 (WTGS) 20:00	06:25 19:38	06:31 18:46	06:31 17:00	07:28 16:40
Potential sun hours	296	296	369	400	450	454	461	429	375	345	296	286
Total, worst case					12	239	86					
Sun reduction					0,47	0,54	0,61					
Oper. time red.					0,89	0,89	0,89					
Wind dir. red.					0,57	0,57	0,57					
Total reduction					0,24	0,27	0,31					
Total, real					3	65	26					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 4 plla 6 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (71)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:35	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:06 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:38 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:37	05:38 20:35	06:08 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 19:12	07:12 18:22	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 17:00	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:57	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:54	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:48 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:23 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12		06:51 19:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:28 16:38
30	07:16 17:13		06:49 19:23	06:01 19:57	05:31 20:27	05:30 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14		06:48 19:24		05:30 20:28		05:53 20:21	06:25 19:38	06:31 16:58			07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 5 plla 108 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (26)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 6 plla 14 - Shadow Receptor: 1,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (2)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	
1	07:28 16:41 31	14:42 (WTG5) 15:13 (WTG5) 17:15	07:14 19	14:48 (WTG5) 15:07 (WTG5) 17:50	06:38 17:50	06:46 19:25	05:59 20:28
2	07:28 16:41 31	14:42 (WTG5) 15:13 (WTG5) 17:17	19	14:49 (WTG5) 15:07 (WTG5) 17:52	06:36 17:52	06:44 19:27	05:58 20:29
3	07:28 16:42 31	14:42 (WTG5) 15:13 (WTG5) 17:18	18	14:48 (WTG5) 15:05 (WTG5) 17:53	06:34 17:53	06:42 19:28	05:56 20:30
4	07:28 16:43 32	14:42 (WTG5) 15:14 (WTG5) 17:19	17	14:49 (WTG5) 15:05 (WTG5) 17:54	06:33 17:54	06:41 19:29	05:55 20:31
5	07:28 16:44 32	14:42 (WTG5) 15:14 (WTG5) 17:21	16	14:50 (WTG5) 15:04 (WTG5) 17:55	06:31 17:55	06:39 19:30	05:54 20:31
6	07:28 16:45 32	14:42 (WTG5) 15:14 (WTG5) 17:22	14	14:51 (WTG5) 15:04 (WTG5) 17:56	06:30 17:56	06:37 19:31	05:53 20:32
7	07:28 16:46 31	14:43 (WTG5) 15:14 (WTG5) 17:23	13	14:52 (WTG5) 15:03 (WTG5) 17:57	06:28 17:57	06:36 19:32	05:51 20:33
8	07:28 16:47 32	14:42 (WTG5) 15:14 (WTG5) 17:24	11	14:54 (WTG5) 15:02 (WTG5) 17:59	06:26 17:59	06:34 19:33	05:50 20:33
9	07:28 16:48 32	14:42 (WTG5) 15:14 (WTG5) 17:26	8	14:54 (WTG5) 15:01 (WTG5) 18:00	06:25 18:00	06:32 19:34	05:49 20:34
10	07:28 16:49 31	14:43 (WTG5) 15:14 (WTG5) 17:27	7	14:56 (WTG5) 15:00 (WTG5) 18:01	06:23 18:01	06:31 19:35	05:48 20:35
11	07:28 16:50 31	14:43 (WTG5) 15:14 (WTG5) 17:28	4	14:58 (WTG5) 15:00 (WTG5) 18:02	06:21 18:02	06:29 19:36	05:47 20:35
12	07:27 16:51 32	14:42 (WTG5) 15:14 (WTG5) 17:29	2	15:00 (WTG5) 15:00 (WTG5) 18:03	06:20 18:03	06:27 19:37	05:46 20:36
13	07:27 16:52 31	14:43 (WTG5) 15:14 (WTG5) 17:31		06:18 18:04	06:26 19:39	06:26 19:39	05:44 20:36
14	07:27 16:53 31	14:42 (WTG5) 15:13 (WTG5) 17:32		06:16 18:05	06:24 19:40	06:24 19:40	05:43 20:37
15	07:26 16:55 31	14:43 (WTG5) 15:14 (WTG5) 17:33		06:15 18:07	06:23 19:41	06:23 19:41	05:42 20:37
16	07:26 16:56 30	14:43 (WTG5) 15:13 (WTG5) 17:35		06:13 18:08	06:21 19:42	06:21 19:42	05:41 20:37
17	07:25 16:57 30	14:43 (WTG5) 15:13 (WTG5) 17:36		06:11 18:09	06:20 19:43	06:20 19:43	05:40 20:38
18	07:25 16:58 30	14:43 (WTG5) 15:13 (WTG5) 17:37		06:10 18:10	06:18 19:44	06:18 19:44	05:39 20:38
19	07:24 16:59 29	14:44 (WTG5) 15:13 (WTG5) 17:38		06:08 18:11	06:16 19:45	06:16 19:45	05:39 20:38
20	07:24 17:00 29	14:43 (WTG5) 15:12 (WTG5) 17:39		06:06 18:12	06:15 19:46	06:15 19:46	05:38 20:39
21	07:23 17:02 29	14:43 (WTG5) 15:12 (WTG5) 17:41		06:04 18:13	06:13 19:47	06:13 19:47	05:37 20:39
22	07:23 17:03 28	14:44 (WTG5) 15:12 (WTG5) 17:42		06:03 18:14	06:12 19:48	06:12 19:48	05:36 20:39
23	07:22 17:04 27	14:44 (WTG5) 15:11 (WTG5) 17:43		06:01 18:16	06:10 19:50	06:10 19:50	05:35 20:39
24	07:21 17:05 27	14:44 (WTG5) 15:11 (WTG5) 17:44		05:59 18:17	06:09 19:51	06:09 19:51	05:34 20:39
25	07:20 17:07 26	14:44 (WTG5) 15:10 (WTG5) 17:46		05:58 18:18	06:07 19:52	06:07 19:52	05:34 20:40
26	07:20 17:08 26	14:44 (WTG5) 15:10 (WTG5) 17:47		05:56 18:19	06:06 19:53	06:06 19:53	05:33 20:40
27	07:19 17:09 24	14:45 (WTG5) 15:09 (WTG5) 17:48		05:54 18:20	06:05 19:54	06:05 19:54	05:32 20:40
28	07:18 17:10 24	14:46 (WTG5) 15:08 (WTG5) 17:49		05:53 18:21	06:03 19:55	06:03 19:55	05:32 20:40
29	07:17 17:12 23	14:46 (WTG5) 15:09 (WTG5) 17:47		05:51 18:22	06:02 19:56	06:02 19:56	05:31 20:40
30	07:16 17:13 21	14:47 (WTG5) 15:08 (WTG5) 17:45		05:49 18:23	06:00 19:57	06:00 19:57	05:30 20:40
31	07:15 17:14 21	14:47 (WTG5) 15:08 (WTG5) 17:44		05:47 18:24	05:59 19:58	05:59 19:58	05:29 20:40
Potential sun hours	295	296	369	400	450	454	
Total, worst case	895	129					
Sun reduction	0,44	0,46					
Oper. time red.	0,89	0,89					
Wind dir. red.	0,58	0,58					
Total reduction	0,23	0,24					
Total, real	204	30					

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 6 plla 14 - Shadow Receptor: 1,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (2)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30	05:54	06:26	06:57	06:32	14:25 (WTG5)
	20:40	20:20	19:36	18:45	16:57	5 14:30 (WTG5)
2	05:30	05:55	06:27	06:58	06:33	14:24 (WTG5)
	20:39	20:19	19:34	18:43	16:56	7 14:31 (WTG5)
3	05:31	05:56	06:28	06:59	06:34	14:22 (WTG5)
	20:39	20:18	19:33	18:41	16:54	9 14:31 (WTG5)
4	05:31	05:57	06:29	07:00	06:36	14:22 (WTG5)
	20:39	20:17	19:31	18:39	16:53	11 14:33 (WTG5)
5	05:32	05:58	06:30	07:01	06:37	14:21 (WTG5)
	20:39	20:15	19:29	18:38	16:52	12 14:33 (WTG5)
6	05:32	05:59	06:31	07:02	06:38	14:20 (WTG5)
	20:39	20:14	19:28	18:36	16:51	14 14:34 (WTG5)
7	05:33	06:00	06:32	07:03	06:39	14:20 (WTG5)
	20:38	20:13	19:26	18:34	16:50	16 14:36 (WTG5)
8	05:34	06:01	06:33	07:04	06:41	14:19 (WTG5)
	20:38	20:12	19:24	18:33	16:49	17 14:36 (WTG5)
9	05:34	06:02	06:34	07:05	06:42	14:18 (WTG5)
	20:38	20:10	19:23	18:31	16:47	19 14:37 (WTG5)
10	05:35	06:03	06:35	07:07	06:43	14:19 (WTG5)
	20:37	20:09	19:21	18:29	16:46	19 14:38 (WTG5)
11	05:36	06:04	06:36	07:08	06:44	14:18 (WTG5)
	20:37	20:08	19:19	18:28	16:45	21 14:39 (WTG5)
12	05:37	06:05	06:37	07:09	06:45	14:18 (WTG5)
	20:36	20:06	19:17	18:26	16:44	21 14:39 (WTG5)
13	05:37	06:06	06:38	07:10	06:47	14:18 (WTG5)
	20:36	20:05	19:16	18:25	16:43	23 14:41 (WTG5)
14	05:38	06:07	06:39	07:11	06:48	14:18 (WTG5)
	20:35	20:04	19:14	18:23	16:42	23 14:41 (WTG5)
15	05:39	06:08	06:40	07:12	06:49	14:18 (WTG5)
	20:35	20:02	19:12	18:21	16:42	24 14:42 (WTG5)
16	05:40	06:09	06:41	07:13	06:50	14:17 (WTG5)
	20:34	20:01	19:10	18:20	16:41	26 14:43 (WTG5)
17	05:40	06:10	06:42	07:14	06:52	14:18 (WTG5)
	20:33	19:59	19:09	18:18	16:40	26 14:44 (WTG5)
18	05:41	06:11	06:43	07:16	06:53	14:18 (WTG5)
	20:33	19:58	19:07	18:17	16:39	27 14:45 (WTG5)
19	05:42	06:13	06:44	07:17	06:54	14:18 (WTG5)
	20:32	19:56	19:05	18:15	16:38	27 14:45 (WTG5)
20	05:43	06:14	06:45	07:18	06:55	14:19 (WTG5)
	20:31	19:55	19:04	18:14	16:38	28 14:47 (WTG5)
21	05:44	06:15	06:46	07:19	06:56	14:19 (WTG5)
	20:30	19:53	19:02	18:12	16:37	29 14:48 (WTG5)
22	05:45	06:16	06:47	07:20	06:57	14:19 (WTG5)
	20:30	19:52	19:00	18:11	16:36	29 14:48 (WTG5)
23	05:46	06:17	06:48	07:21	06:59	14:20 (WTG5)
	20:29	19:50	18:58	18:09	16:36	29 14:49 (WTG5)
24	05:47	06:18	06:49	07:22	07:00	14:20 (WTG5)
	20:28	19:49	18:57	18:08	16:35	30 14:50 (WTG5)
25	05:47	06:19	06:51	06:24	07:01	14:21 (WTG5)
	20:27	19:47	18:55	17:06	16:34	30 14:51 (WTG5)
26	05:48	06:20	06:52	06:25	07:02	14:22 (WTG5)
	20:26	19:46	18:53	17:05	16:34	30 14:52 (WTG5)
27	05:49	06:21	06:53	06:26	07:03	14:22 (WTG5)
	20:25	19:44	18:51	17:04	16:33	31 14:53 (WTG5)
28	05:50	06:22	06:54	06:27	07:04	14:22 (WTG5)
	20:24	19:43	18:50	17:02	16:33	31 14:53 (WTG5)
29	05:51	06:23	06:55	06:28	07:05	14:23 (WTG5)
	20:23	19:41	18:48	17:01	16:32	31 14:54 (WTG5)
30	05:52	06:24	06:56	06:30	07:07	14:25 (WTG5)
	20:22	19:39	18:46	16:59	16:32	31 14:56 (WTG5)
31	05:53	06:25		06:31		14:27 (WTG5)
	20:21	19:38		16:58	3	14:30 (WTG5)
Potential sun hours	461	429	375	345	296	286
Total, worst case				3	676	973
Sun reduction				0,44	0,40	0,36
Oper. time red.				0,89	0,89	0,89
Wind dir. red.				0,58	0,58	0,58
Total reduction				0,22	0,21	0,19
Total, real				1	141	183

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 6 plla 264 - Shadow Receptor: 1,0 x 1,0 Azimuth: 0,0° Slope: 90,0° (68)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:30	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:51	19:26	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:31	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:32
3	07:28	07:12	06:34	06:43	05:57	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:43	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:55	16:32
4	07:28	07:11	06:33	06:41	05:55	05:28	05:32	05:57	06:29	07:00	06:36	07:11
	16:44	17:20	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:40	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:38	05:53	05:28	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:52	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:35	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:02	06:33	07:04	06:41	07:15
	16:47	17:25	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:33	05:49	05:27	05:35	06:03	06:34	07:06	06:42	07:15
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:27	05:35	06:04	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:34	20:37	20:09	19:21	18:30	16:47	16:31
11	07:28	07:03	06:21	06:29	05:47	05:27	05:36	06:05	06:36	07:08	06:44	07:17
	16:51	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:46	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:06	06:37	07:09	06:45	07:18
	16:52	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:18	18:26	16:45	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:38	06:07	06:38	07:10	06:47	07:19
	16:53	17:31	18:05	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:44	16:31
14	07:27	06:59	06:16	06:24	05:44	05:26	05:38	06:08	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:36	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:43	05:26	05:39	06:09	06:40	07:12	06:49	07:20
	16:55	17:34	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:22	16:42	16:31
16	07:26	06:57	06:13	06:21	05:42	05:26	05:40	06:10	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:32
17	07:25	06:55	06:11	06:20	05:41	05:26	05:41	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:42	06:12	06:43	07:16	06:53	07:22
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:17	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	17:00	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:39	16:33
20	07:24	06:51	06:06	06:15	05:38	05:27	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:14	05:37	05:27	05:44	06:15	06:47	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:54	19:02	18:12	16:37	16:34
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:48	07:20	06:57	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:11	05:35	05:27	05:46	06:17	06:49	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:35
24	07:21	06:45	06:00	06:09	05:35	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:06	17:45	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:08	05:34	05:28	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:07	16:35	16:36
26	07:20	06:42	05:56	06:06	05:33	05:28	05:49	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:23	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:33	05:28	05:50	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:52	17:04	16:34	16:37
28	07:18	06:39	05:53	06:03	05:32	05:29	05:51	06:22	06:54	06:27	07:04	07:27
	17:11	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:38
29	07:17		06:51	06:02	05:31	05:29	05:52	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:01	05:31	05:30	05:53	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:48		05:30		05:54	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 6 plla 71 - Shadow Receptor: 1,0 × 3,0 Azimuth: 0,0° Slope: 90,0° (1)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:05	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	296	296	369	400	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 255 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 255 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 255 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 342 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:17
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:26	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 358 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:32	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:11	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:17
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:26	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:53	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:39	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 63 plla 358 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:32	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:11	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:17
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:26	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:53	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:39	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 64 p.lla 163 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:15	06:38 17:50	06:46 19:26	05:59 19:58	05:29 20:29	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:41	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:40	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:31
3	07:29 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:35 16:54	07:10 16:31
4	07:29 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:02	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	07:11 16:31
5	07:29 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:29 16:45	07:09 17:22	06:30 17:56	06:37 19:31	05:53 20:04	05:27 20:32	05:32 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:57	06:36 19:32	05:51 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:30
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	05:49 20:07	05:27 20:34	05:34 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:47	07:16 16:30
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:26 20:35	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:30
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:26 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:05 20:07	06:37 19:17	07:09 18:26	06:46 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:44 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:43	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:43 20:12	05:26 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	06:49 16:42	07:21 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:11	07:13 18:20	06:50 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:40 20:15	05:26 20:38	05:40 20:33	06:10 19:59	06:42 19:09	07:14 18:18	06:52 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:39 20:16	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	06:53 16:39	07:23 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:57	06:44 19:05	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	05:37 20:19	05:26 20:39	05:44 20:31	06:15 19:54	06:46 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:14	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	06:58 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	05:34 20:22	05:27 20:40	05:47 20:28	06:18 19:49	06:50 18:57	07:23 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	05:34 20:23	05:27 20:40	05:47 20:27	06:19 19:47	06:51 18:55	07:24 17:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:24	05:28 20:40	05:48 20:26	06:20 19:46	06:52 18:53	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:32 20:24	05:28 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:26 17:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:28 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:37
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:06 16:32	07:28 16:38
30	07:16 17:13	06:36 17:49	05:49 18:23	06:00 19:57	05:30 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:29 16:59	07:07 16:32	07:28 16:39
31	07:15 17:14	06:35 17:49	05:47 18:24	06:00 19:57	05:30 20:28	05:29 20:40	05:53 20:21	06:25 19:38	06:57 18:58	07:30 16:58	07:08 16:40	07:28 16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 64 plla 175 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 64 plla 181 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 64 plla 182 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 157 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 181 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 187 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	454	461	429	375	345	296	286
Total, worst case												107
Sun reduction												0,36
Oper. time red.												0,89
Wind dir. red.												0,68
Total reduction												0,22
Total, real												24

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 189 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 190 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 195 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:31
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:53	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	455	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 68 plla 73 - Shadow Receptor: 1,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (3)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:15	17:50	19:25	19:58	20:28	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:41	17:17	17:52	19:27	19:59	20:29	20:39	20:19	19:34	18:43	16:56	16:31
3	07:28	07:12	06:34	06:42	05:56	05:28	05:31	05:56	06:28	06:59	06:34	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:28	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:01	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:28	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:28	07:09	06:30	06:37	05:53	05:27	05:32	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:57	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:30
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:05	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:47	16:30
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:30
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:27	05:46	05:26	05:37	06:05	06:37	07:09	06:45	07:18
	16:51	17:29	18:03	19:37	20:10	20:36	20:36	20:06	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:44	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:53	17:32	18:05	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:42	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:20
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:10	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:10	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:39	05:26	05:41	06:11	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:56	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:00	17:39	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:04	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:30	19:53	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:57	07:25
	17:03	17:42	18:14	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:49	07:22	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:39	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:47	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:05	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:32	16:38
30	07:16		06:49	06:00	05:30	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	16:59	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

Project:

Monacilioni

SHADOW - Calendar

Shadow receptor: fg 69 plla 219 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (75)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:26	07:04 (WTGS) 05:59	05:29 20:29	05:30 20:40	05:54 20:20	06:26 19:36	07:11 (WTGS) 3	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	07:03 (WTGS) 05:58	05:29 20:29	05:30 20:40	05:55 20:19	06:27 19:34	07:05 (WTGS) 15	06:58 18:43	06:33 16:56	07:09 16:32
3	07:29 16:42	07:12 17:18	06:34 17:53	06:42 19:28	07:01 (WTGS) 05:56	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	07:01 (WTGS) 22	06:59 18:41	06:35 16:54	07:10 16:31
4	07:29 16:43	07:11 17:19	06:33 17:54	06:41 19:29	06:59 (WTGS) 05:55	05:28 20:02	05:31 20:39	05:57 20:17	06:29 19:31	06:59 (WTGS) 26	07:00 18:39	06:36 16:53	07:11 16:31
5	07:29 16:44	07:10 17:21	06:31 17:55	06:39 19:30	06:59 (WTGS) 05:54	05:28 20:03	05:32 20:31	05:58 20:15	06:30 19:29	06:57 (WTGS) 29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:37 19:31	06:59 (WTGS) 05:53	05:27 20:04	05:33 20:32	05:59 20:14	06:31 19:28	06:55 (WTGS) 32	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	07:00 (WTGS) 05:51	05:27 20:05	05:33 20:33	06:00 20:13	06:32 19:26	06:54 (WTGS) 34	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	06:26 17:59	06:34 19:33	07:02 (WTGS) 05:50	05:27 20:06	05:34 20:33	06:01 20:12	06:33 19:24	06:54 (WTGS) 35	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:32 19:34	07:03 (WTGS) 05:49	05:27 20:07	05:34 20:34	06:02 20:10	06:34 19:23	06:55 (WTGS) 34	07:06 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	07:07 (WTGS) 05:48	05:26 20:08	05:35 20:35	06:03 20:09	06:35 19:21	06:56 (WTGS) 33	07:07 18:29	06:43 16:46	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	07:13 (WTGS) 05:47	05:26 20:09	05:36 20:37	06:04 20:08	06:36 19:19	06:57 (WTGS) 33	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	06:20 18:03	06:28 19:38	07:15 (WTGS) 05:46	05:26 20:10	05:37 20:36	06:05 20:07	06:37 19:17	06:58 (WTGS) 32	07:09 18:26	06:46 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:37 20:36	06:06 20:05	06:38 19:16	06:59 (WTGS) 31	07:10 18:25	06:47 16:43	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:43 20:12	05:26 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:00 (WTGS) 29	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:42 20:13	05:26 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:01 (WTGS) 28	07:12 18:21	06:49 16:42	07:21 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:41 20:14	05:26 20:37	05:40 20:34	06:09 20:01	06:41 19:11	07:02 (WTGS) 27	07:13 18:20	06:50 16:41	07:22 16:31
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	06:30 (WTGS) 05:40	05:25 20:38	05:41 20:33	06:11 20:05	06:42 19:09	07:03 (WTGS) 25	07:14 18:18	06:52 16:40	07:23 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	06:28 (WTGS) 05:40	05:26 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:04 (WTGS) 23	07:16 18:17	06:53 16:39	07:23 16:32
19	07:24 16:59	06:52 17:38	06:08 18:11	06:16 19:45	06:27 (WTGS) 05:39	05:26 20:38	05:42 20:32	06:13 19:57	06:44 19:05	07:05 (WTGS) 22	07:17 18:15	06:54 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	06:25 (WTGS) 05:38	05:26 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:06 (WTGS) 20	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:13 19:47	06:23 (WTGS) 05:37	05:26 20:39	05:44 20:31	06:15 19:54	06:46 19:02	07:07 (WTGS) 17	07:19 18:12	06:56 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	06:22 (WTGS) 05:36	05:27 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:08 (WTGS) 15	07:20 18:11	06:58 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:10 19:50	06:20 (WTGS) 05:35	05:27 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:09 (WTGS) 13	07:21 18:09	06:59 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	05:59 18:17	06:09 19:51	06:18 (WTGS) 05:34	06:09 20:40	05:47 20:28	06:18 19:49	06:50 18:57	07:10 (WTGS) 10	07:23 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:07 19:52	06:16 (WTGS) 05:34	06:07 20:40	05:48 20:27	06:19 19:47	06:51 18:55	07:11 (WTGS) 7	07:24 18:06	07:01 16:34	07:26 16:35
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	06:15 (WTGS) 05:33	06:06 20:40	05:48 20:26	06:20 19:46	06:52 18:53	07:12 (WTGS) 4	07:25 18:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	06:13 (WTGS) 05:32	06:05 20:40	05:49 20:25	06:21 19:44	06:53 18:51	07:16 (WTGS) 1	07:26 18:04	07:03 16:33	07:27 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	06:11 (WTGS) 05:31	06:03 20:40	05:50 20:24	06:22 19:43	06:54 18:50	07:17 (WTGS) 1	07:27 18:03	07:04 16:33	07:27 16:37
29	07:17 17:12	06:38 17:50	05:52 18:22	06:02 19:56	06:10 (WTGS) 05:30	06:02 20:40	05:51 20:23	06:23 19:41	06:55 18:48	07:18 (WTGS) 1	07:28 18:01	07:06 16:33	07:28 16:38
30	07:16 17:13	06:37 17:51	05:51 18:23	06:01 19:57	07:08 (WTGS) 05:29	06:00 20:40	05:52 20:22	06:24 19:39	06:56 18:46	07:19 (WTGS) 1	07:29 18:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:36 17:52	05:50 18:24	06:00 19:58	07:06 (WTGS) 05:28	05:59 20:40	05:53 20:21	06:25 19:38	06:57 18:45	07:20 (WTGS) 1	07:30 18:00	07:08 16:31	07:28 16:40
Potential sun hours	296	296	369	400	450	454	461	429	375	345	296	286	
Total, worst case			293	294					599				
Sun reduction			0,44	0,48					0,58				
Oper. time red.			0,89	0,89					0,89				
Wind dir. red.			0,57	0,57					0,57				
Total reduction			0,22	0,24					0,30				
Total, real			66	72					177				

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 69 plla 221 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (73)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28	07:14	06:38	06:46	05:59	05:29	05:30	05:54	06:26	06:57	06:32	07:08
	16:41	17:16	17:50	19:26	19:58	20:29	20:40	20:20	19:36	18:45	16:57	16:32
2	07:28	07:13	06:36	06:44	05:58	05:29	05:30	05:55	06:27	06:58	06:33	07:09
	16:42	17:17	17:52	19:27	19:59	20:29	20:40	20:19	19:34	18:43	16:56	16:32
3	07:29	07:12	06:34	06:42	05:56	05:29	05:31	05:56	06:28	06:59	06:35	07:10
	16:42	17:18	17:53	19:28	20:00	20:30	20:39	20:18	19:33	18:41	16:54	16:31
4	07:29	07:11	06:33	06:41	05:55	05:28	05:31	05:57	06:29	07:00	06:36	07:11
	16:43	17:19	17:54	19:29	20:02	20:31	20:39	20:17	19:31	18:39	16:53	16:31
5	07:29	07:10	06:31	06:39	05:54	05:28	05:32	05:58	06:30	07:01	06:37	07:12
	16:44	17:21	17:55	19:30	20:03	20:31	20:39	20:15	19:29	18:38	16:52	16:31
6	07:29	07:09	06:30	06:37	05:53	05:27	05:33	05:59	06:31	07:02	06:38	07:13
	16:45	17:22	17:56	19:31	20:04	20:32	20:39	20:14	19:28	18:36	16:51	16:31
7	07:28	07:08	06:28	06:36	05:51	05:27	05:33	06:00	06:32	07:03	06:39	07:14
	16:46	17:23	17:58	19:32	20:05	20:33	20:38	20:13	19:26	18:34	16:50	16:31
8	07:28	07:07	06:26	06:34	05:50	05:27	05:34	06:01	06:33	07:04	06:41	07:15
	16:47	17:24	17:59	19:33	20:06	20:33	20:38	20:12	19:24	18:33	16:49	16:31
9	07:28	07:06	06:25	06:32	05:49	05:27	05:34	06:02	06:34	07:06	06:42	07:16
	16:48	17:26	18:00	19:34	20:07	20:34	20:38	20:10	19:23	18:31	16:48	16:31
10	07:28	07:04	06:23	06:31	05:48	05:26	05:35	06:03	06:35	07:07	06:43	07:16
	16:49	17:27	18:01	19:35	20:08	20:35	20:37	20:09	19:21	18:29	16:46	16:31
11	07:28	07:03	06:21	06:29	05:47	05:26	05:36	06:04	06:36	07:08	06:44	07:17
	16:50	17:28	18:02	19:36	20:09	20:35	20:37	20:08	19:19	18:28	16:45	16:31
12	07:27	07:02	06:20	06:28	05:46	05:26	05:37	06:05	06:37	07:09	06:46	07:18
	16:51	17:30	18:03	19:38	20:10	20:36	20:36	20:07	19:17	18:26	16:44	16:31
13	07:27	07:01	06:18	06:26	05:45	05:26	05:37	06:06	06:38	07:10	06:47	07:19
	16:52	17:31	18:04	19:39	20:11	20:36	20:36	20:05	19:16	18:25	16:43	16:31
14	07:27	06:59	06:16	06:24	05:43	05:26	05:38	06:07	06:39	07:11	06:48	07:20
	16:54	17:32	18:06	19:40	20:12	20:37	20:35	20:04	19:14	18:23	16:43	16:31
15	07:26	06:58	06:15	06:23	05:42	05:26	05:39	06:08	06:40	07:12	06:49	07:21
	16:55	17:33	18:07	19:41	20:13	20:37	20:35	20:02	19:12	18:21	16:42	16:31
16	07:26	06:57	06:13	06:21	05:41	05:26	05:40	06:09	06:41	07:13	06:50	07:21
	16:56	17:35	18:08	19:42	20:14	20:37	20:34	20:01	19:11	18:20	16:41	16:31
17	07:25	06:55	06:11	06:20	05:40	05:26	05:40	06:11	06:42	07:14	06:52	07:22
	16:57	17:36	18:09	19:43	20:15	20:38	20:33	19:59	19:09	18:18	16:40	16:32
18	07:25	06:54	06:10	06:18	05:40	05:26	05:41	06:12	06:43	07:16	06:53	07:23
	16:58	17:37	18:10	19:44	20:16	20:38	20:33	19:58	19:07	18:17	16:39	16:32
19	07:24	06:52	06:08	06:16	05:39	05:26	05:42	06:13	06:44	07:17	06:54	07:23
	16:59	17:38	18:11	19:45	20:17	20:38	20:32	19:57	19:05	18:15	16:38	16:32
20	07:24	06:51	06:06	06:15	05:38	05:26	05:43	06:14	06:45	07:18	06:55	07:24
	17:01	17:40	18:12	19:46	20:18	20:39	20:31	19:55	19:04	18:14	16:38	16:33
21	07:23	06:50	06:05	06:13	05:37	05:26	05:44	06:15	06:46	07:19	06:56	07:24
	17:02	17:41	18:13	19:47	20:19	20:39	20:31	19:54	19:02	18:12	16:37	16:33
22	07:23	06:48	06:03	06:12	05:36	05:27	05:45	06:16	06:47	07:20	06:58	07:25
	17:03	17:42	18:15	19:48	20:20	20:39	20:30	19:52	19:00	18:11	16:36	16:34
23	07:22	06:47	06:01	06:10	05:35	05:27	05:46	06:17	06:48	07:21	06:59	07:25
	17:04	17:43	18:16	19:50	20:21	20:39	20:29	19:50	18:58	18:09	16:36	16:34
24	07:21	06:45	05:59	06:09	05:34	05:27	05:47	06:18	06:50	07:23	07:00	07:26
	17:05	17:44	18:17	19:51	20:22	20:40	20:28	19:49	18:57	18:08	16:35	16:35
25	07:20	06:44	05:58	06:07	05:34	05:27	05:48	06:19	06:51	06:24	07:01	07:26
	17:07	17:46	18:18	19:52	20:23	20:40	20:27	19:47	18:55	17:06	16:34	16:35
26	07:20	06:42	05:56	06:06	05:33	05:28	05:48	06:20	06:52	06:25	07:02	07:27
	17:08	17:47	18:19	19:53	20:24	20:40	20:26	19:46	18:53	17:05	16:34	16:36
27	07:19	06:41	05:54	06:05	05:32	05:28	05:49	06:21	06:53	06:26	07:03	07:27
	17:09	17:48	18:20	19:54	20:24	20:40	20:25	19:44	18:51	17:04	16:33	16:37
28	07:18	06:39	05:53	06:03	05:32	05:28	05:50	06:22	06:54	06:27	07:04	07:27
	17:10	17:49	18:21	19:55	20:25	20:40	20:24	19:43	18:50	17:02	16:33	16:37
29	07:17		06:51	06:02	05:31	05:29	05:51	06:23	06:55	06:28	07:06	07:28
	17:12		19:22	19:56	20:26	20:40	20:23	19:41	18:48	17:01	16:33	16:38
30	07:16		06:49	06:00	05:31	05:29	05:52	06:24	06:56	06:30	07:07	07:28
	17:13		19:23	19:57	20:27	20:40	20:22	19:39	18:46	17:00	16:32	16:39
31	07:15		06:47		05:30		05:53	06:25		06:31		07:28
	17:14		19:24		20:28		20:21	19:38		16:58		16:40
Potential sun hours	295	296	369	400	450	454	461	429	375	345	296	286
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 69 plla 221 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 16:41	07:14 17:16	06:38 17:50	07:02 (WTG5) 17:50	06:46 19:26	05:59 20:29
2	07:28 16:42	07:13 17:17	06:36 17:52	07:02 (WTG5) 17:52	06:44 19:27	05:58 20:29
3	07:29 16:42	07:12 17:18	06:34 17:53	07:03 (WTG5) 17:53	06:42 19:28	05:56 20:30
4	07:29 16:43	07:11 17:19	06:33 17:54	07:03 (WTG5) 17:54	06:41 19:29	05:55 20:31
5	07:29 16:44	07:10 17:21	06:31 17:55	07:03 (WTG5) 17:55	06:39 19:30	05:54 20:31
6	07:29 16:45	07:09 17:22	06:30 17:56	07:05 (WTG5) 17:56	06:37 19:31	05:53 20:32
7	07:28 16:46	07:08 17:23	06:28 17:58	07:06 (WTG5) 17:58	06:36 19:32	05:51 20:33
8	07:28 16:47	07:07 17:24	06:26 17:59	07:07 (WTG5) 17:59	06:34 19:33	05:50 20:33
9	07:28 16:48	07:06 17:26	06:25 18:00	07:09 (WTG5) 18:00	06:32 19:34	05:49 20:34
10	07:28 16:49	07:04 17:27	07:24 (WTG5) 07:28 (WTG5)	06:23 18:01	07:11 (WTG5) 19:35	05:48 20:35
11	07:28 16:50	07:03 17:28	07:23 (WTG5) 07:33 (WTG5)	06:21 18:02	07:16 (WTG5) 19:36	05:47 20:35
12	07:27 16:51	07:02 17:30	07:22 (WTG5) 07:36 (WTG5)	06:20 18:03	06:28 19:38	05:46 20:36
13	07:27 16:52	07:01 17:31	07:20 (WTG5) 07:37 (WTG5)	06:18 18:04	06:26 19:39	05:45 20:36
14	07:27 16:54	06:59 17:32	07:19 (WTG5) 07:39 (WTG5)	06:16 18:06	06:24 19:40	05:43 20:37
15	07:26 16:55	06:58 17:33	07:18 (WTG5) 07:41 (WTG5)	06:15 18:07	06:23 19:41	05:42 20:37
16	07:26 16:56	06:57 17:35	07:16 (WTG5) 07:41 (WTG5)	06:13 18:08	06:21 19:42	05:41 20:37
17	07:25 16:57	06:55 17:36	07:15 (WTG5) 07:43 (WTG5)	06:11 18:09	06:20 19:43	05:40 20:38
18	07:25 16:58	06:54 17:37	07:13 (WTG5) 07:43 (WTG5)	06:10 18:10	06:18 19:44	05:40 20:38
19	07:24 16:59	06:52 17:38	07:12 (WTG5) 07:44 (WTG5)	06:08 18:11	06:16 19:45	05:39 20:38
20	07:24 17:01	06:51 17:40	07:11 (WTG5) 07:45 (WTG5)	06:06 18:12	06:15 19:46	05:38 20:39
21	07:23 17:02	06:50 17:41	07:09 (WTG5) 07:45 (WTG5)	06:05 18:13	06:13 19:47	05:37 20:39
22	07:23 17:03	06:48 17:42	07:08 (WTG5) 07:46 (WTG5)	06:03 18:15	06:12 19:48	05:36 20:39
23	07:22 17:04	06:47 17:43	07:06 (WTG5) 07:45 (WTG5)	06:01 18:16	06:10 19:50	05:35 20:39
24	07:21 17:05	06:45 17:44	07:05 (WTG5) 07:46 (WTG5)	05:59 18:17	06:09 19:51	05:34 20:40
25	07:20 17:07	06:44 17:46	07:03 (WTG5) 07:45 (WTG5)	05:58 18:18	06:07 19:52	05:34 20:40
26	07:20 17:08	06:42 17:47	07:01 (WTG5) 07:45 (WTG5)	05:56 18:19	06:06 19:53	05:33 20:40
27	07:19 17:09	06:41 17:48	07:01 (WTG5) 07:45 (WTG5)	05:54 18:20	06:05 19:54	05:32 20:40
28	07:18 17:10	06:39 17:49	07:01 (WTG5) 07:44 (WTG5)	05:53 18:21	06:03 19:55	05:32 20:40
29	07:17 17:12		06:51 19:22	06:51 19:22	06:02 19:56	05:31 20:40
30	07:16 17:13		06:49 19:23	06:49 19:23	06:00 19:57	05:29 20:40
31	07:15 17:14		06:47 19:24	06:47 19:24	05:30 20:28	
Potential sun hours	295	296	369	400	450	454
Total, worst case		564	341			
Sun reduction		0,46	0,44			
Oper. time red.		0,89	0,89			
Wind dir. red.		0,60	0,60			
Total reduction		0,25	0,24			
Total, real		138	80			

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar

Shadow receptor: fg 69 plla 221 - Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)
 Assumptions for shadow calculations
 Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time
 N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

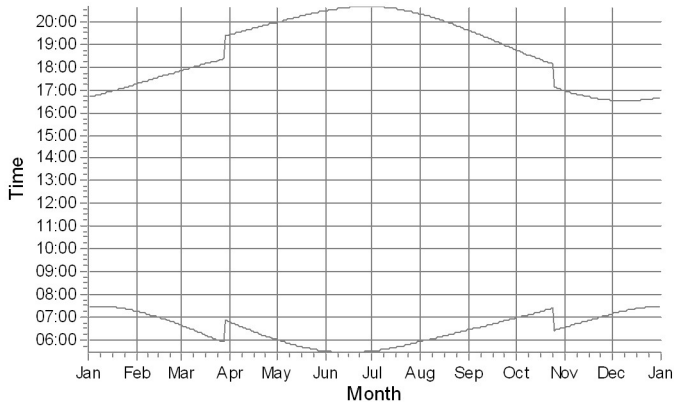
	July	August	September	October	November	December
1	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	06:54 (WTG5) 16:32
2	05:30 20:40	05:55 20:19	06:27 19:34	06:58 18:43	2 06:56 (WTG5) 16:33	07:09 16:32
3	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	14 07:51 (WTG5) 06:35	07:10 16:31
4	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	21 07:47 (WTG5) 06:36	07:11 16:31
5	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	26 07:45 (WTG5) 06:37	07:12 16:31
6	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	30 07:43 (WTG5) 06:38	07:13 16:31
7	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	33 07:41 (WTG5) 06:39	07:14 16:31
8	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	35 07:40 (WTG5) 06:41	07:15 16:31
9	05:34 20:38	06:02 20:10	06:34 19:23	07:06 18:31	37 07:38 (WTG5) 06:42	07:16 16:31
10	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	39 07:37 (WTG5) 06:43	07:16 16:31
11	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	40 07:36 (WTG5) 06:44	07:17 16:31
12	05:37 20:36	06:05 20:07	06:37 19:17	07:09 18:26	41 07:35 (WTG5) 06:46	07:18 16:31
13	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	42 07:35 (WTG5) 06:47	07:19 16:31
14	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	43 07:34 (WTG5) 06:48	07:20 16:31
15	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	43 07:34 (WTG5) 06:49	07:21 16:31
16	05:40 20:34	06:09 20:01	06:41 19:11	07:13 18:20	43 07:34 (WTG5) 06:50	07:21 16:31
17	05:40 20:33	06:11 19:59	06:42 19:09	07:14 18:18	42 07:35 (WTG5) 06:52	07:22 16:32
18	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	40 07:36 (WTG5) 06:53	07:23 16:32
19	05:42 20:32	06:13 19:57	06:44 19:05	07:17 18:15	39 07:38 (WTG5) 06:54	07:23 16:32
20	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	37 07:39 (WTG5) 06:55	07:24 16:33
21	05:44 20:31	06:15 19:54	06:46 19:02	07:19 18:12	35 07:40 (WTG5) 06:56	07:24 16:33
22	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	33 07:41 (WTG5) 06:58	07:25 16:34
23	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	31 07:42 (WTG5) 06:59	07:25 16:34
24	05:47 20:28	06:18 19:49	06:50 18:57	07:23 18:08	29 07:44 (WTG5) 07:00	07:26 16:35
25	05:48 20:27	06:19 19:47	06:51 18:55	06:24 17:06	27 06:45 (WTG5) 07:01	07:26 16:35
26	05:48 20:26	06:20 19:46	06:52 18:53	06:25 17:05	25 06:46 (WTG5) 07:02	07:27 16:36
27	05:49 20:25	06:21 19:44	06:53 18:51	06:26 17:04	22 06:48 (WTG5) 07:03	07:27 16:37
28	05:50 20:24	06:22 19:43	06:54 18:50	06:27 17:02	19 06:49 (WTG5) 07:04	07:27 16:37
29	05:51 20:23	06:23 19:41	06:55 18:48	06:28 17:01	16 06:50 (WTG5) 07:06	07:28 16:38
30	05:52 20:22	06:24 19:39	06:56 18:46	06:30 17:00	13 06:51 (WTG5) 07:07	07:28 16:39
31	05:53 20:21	06:25 19:38	06:57 16:58	06:31 9	06:53 (WTG5) 07:02 (WTG5)	07:28 16:40
Potential sun hours	461	429	375	345	296	286
Total, worst case				904		2
Sun reduction				0,44		0,40
Oper. time red.				0,89		0,89
Wind dir. red.				0,60		0,60
Total reduction				0,23		0,22
Total, real				211		0

Table layout: For each day in each month the following matrix apply

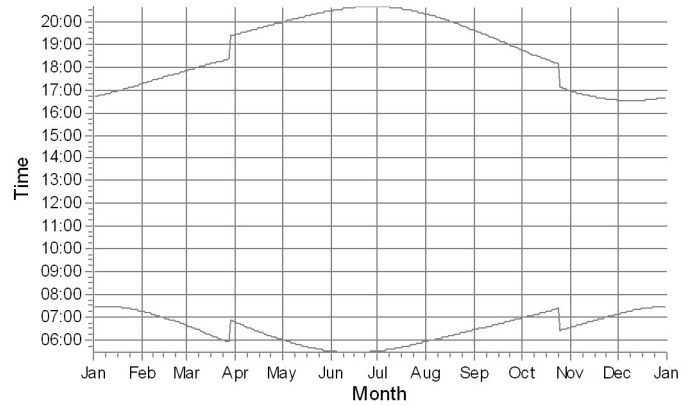
Day in month	Sun rise (hh:mm)	Minutes with flicker	First time (hh:mm) with flicker	(WTG causing flicker first time)
	Sun set (hh:mm)		Last time (hh:mm) with flicker	(WTG causing flicker last time)

SHADOW - Calendar, graphical

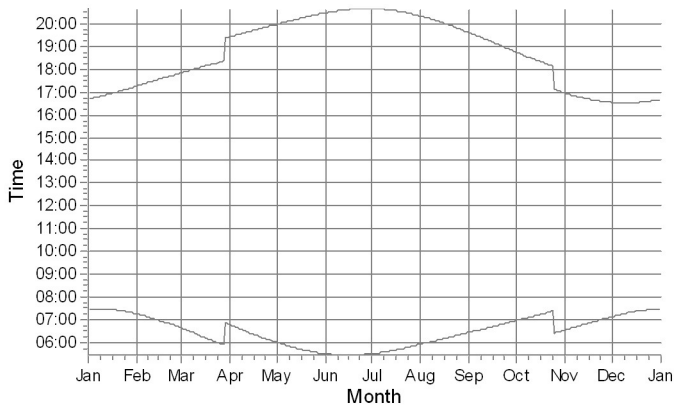
fg 68 plla 157: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (22)



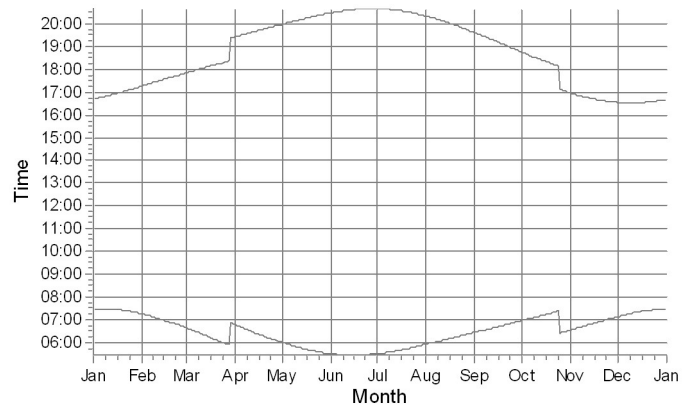
fg 1 plla 58: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (69)



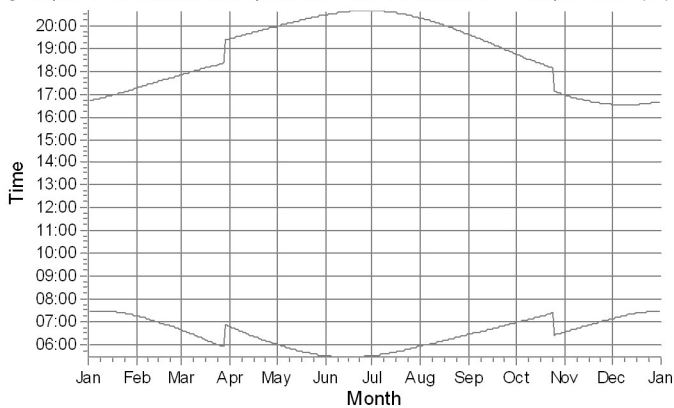
fg 1 plla 58: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (70)



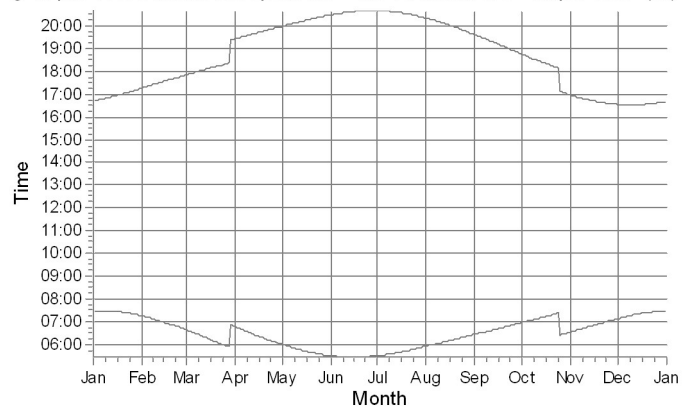
fg 12 plla 196: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (53)



fg 12 plla 199: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (51)



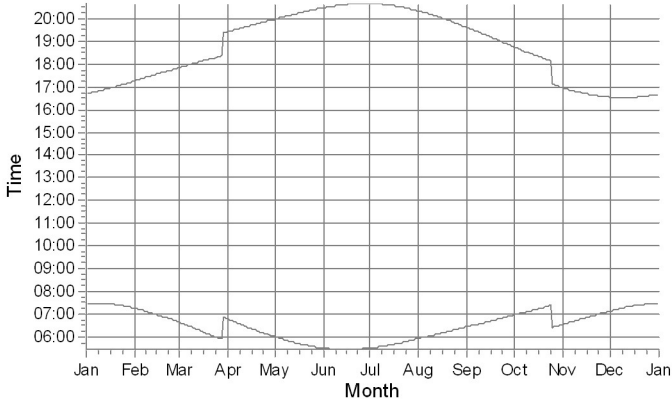
fg 12 plla 199: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (52)



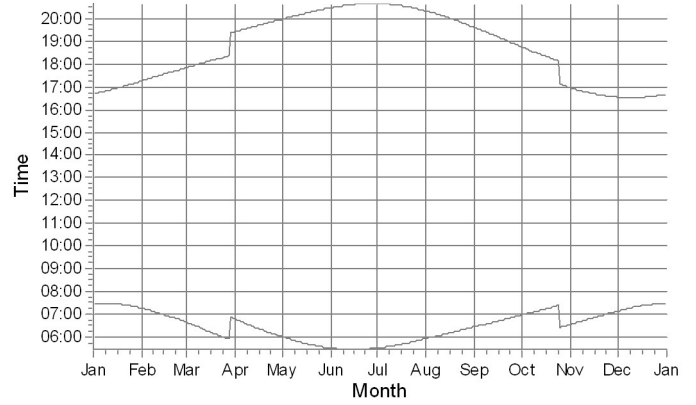
WTGs

SHADOW - Calendar, graphical

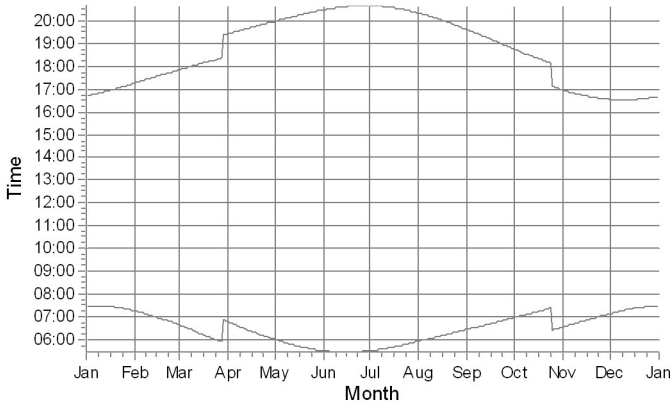
fg 12 plla 201: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (54)



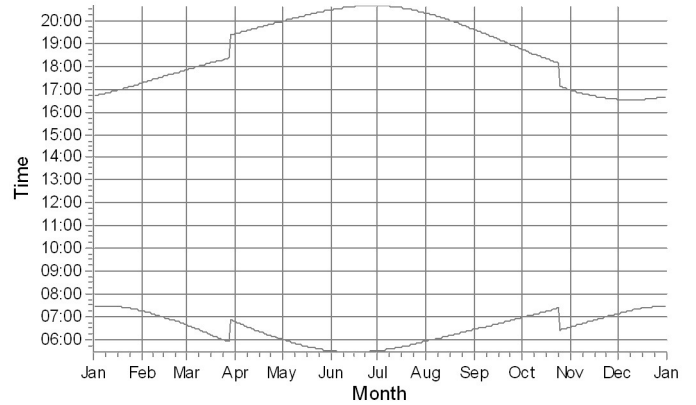
fg 12 plla 207: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (59)



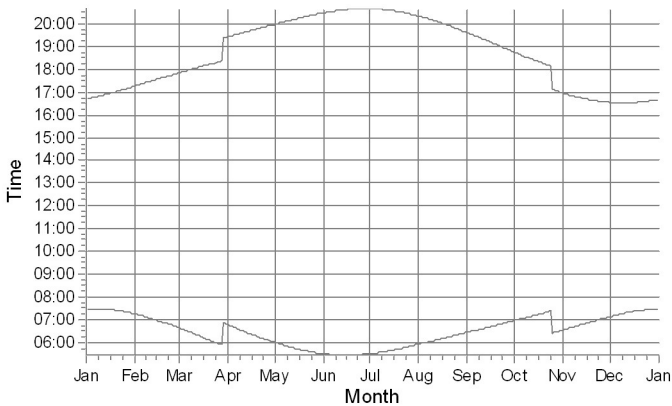
fg 12 plla 207: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (60)



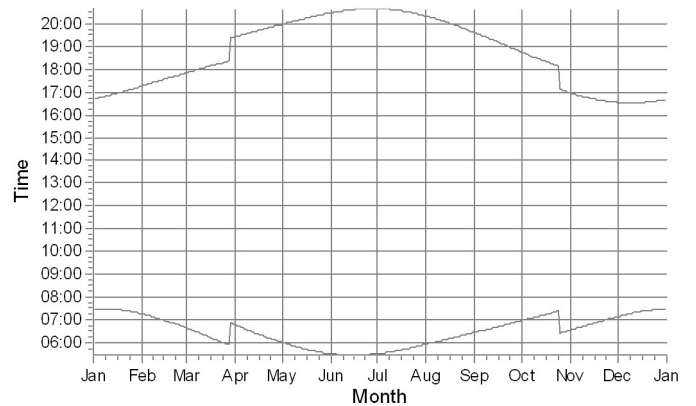
fg 12 plla 217: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (55)



fg 12 plla 218: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (56)



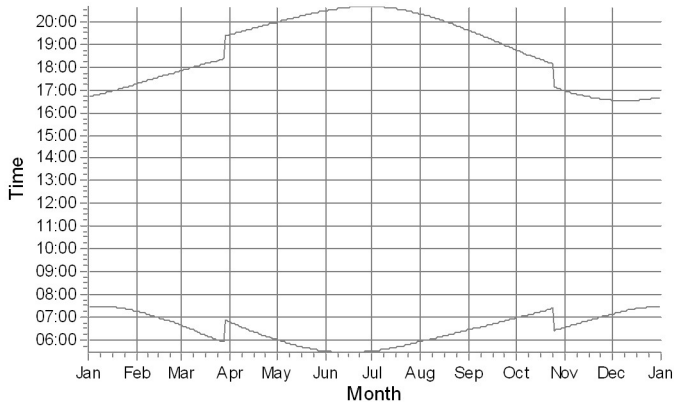
fg 12 plla 218: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (57)



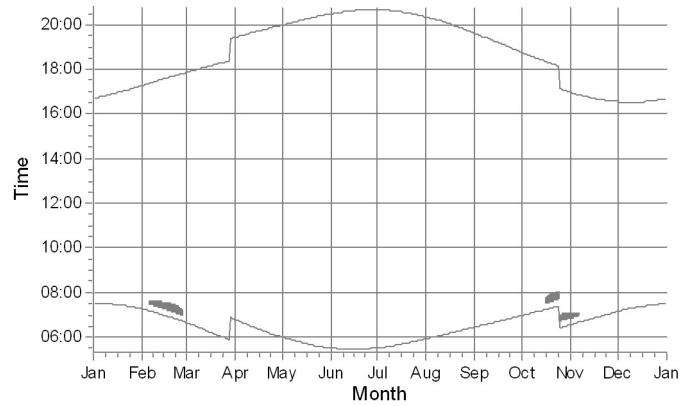
WTGs

SHADOW - Calendar, graphical

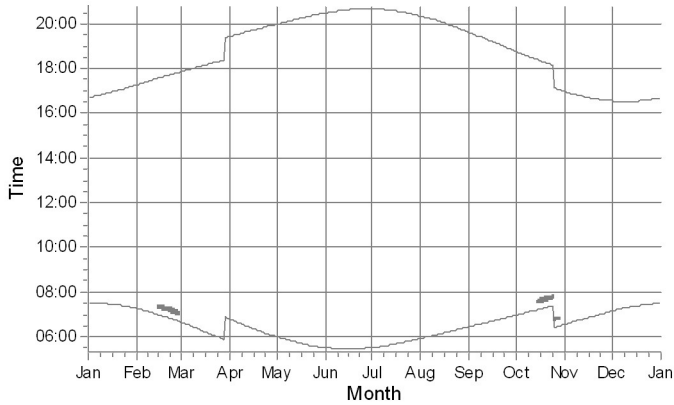
fg 12 plla 223: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (58)



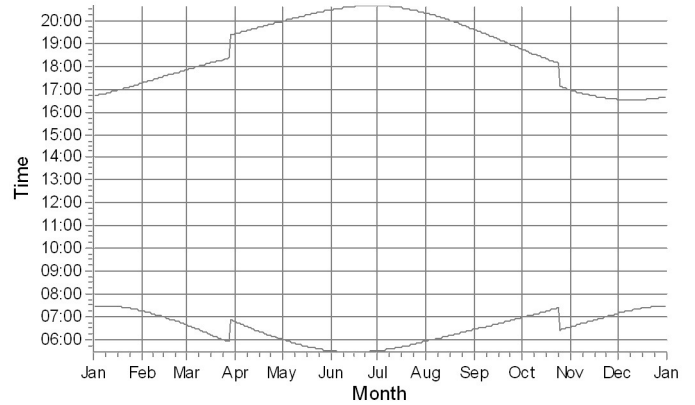
fg 12 plla 241: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (28)



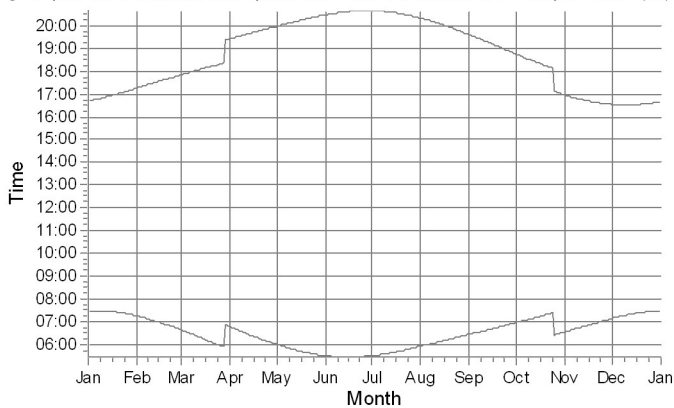
fg 12 plla 254: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (27)



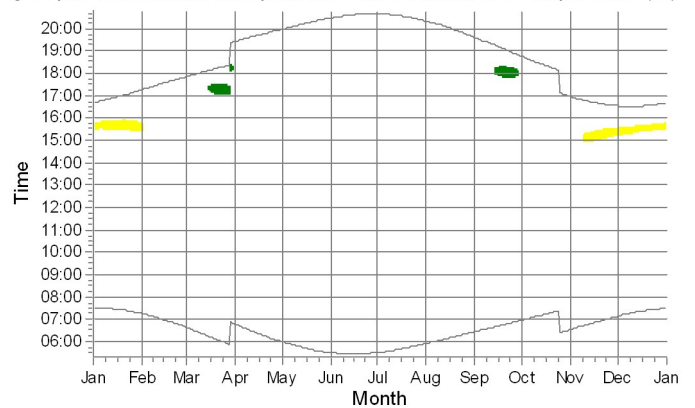
fg 13 plla 443: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (29)



fg 13 plla 444: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (30)



fg 14 plla 182: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (61)

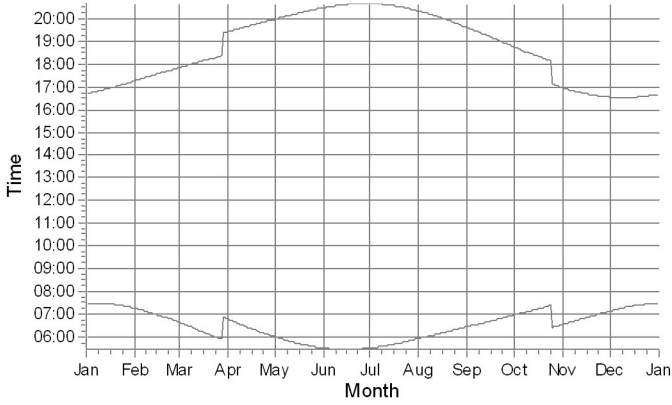


WTGs

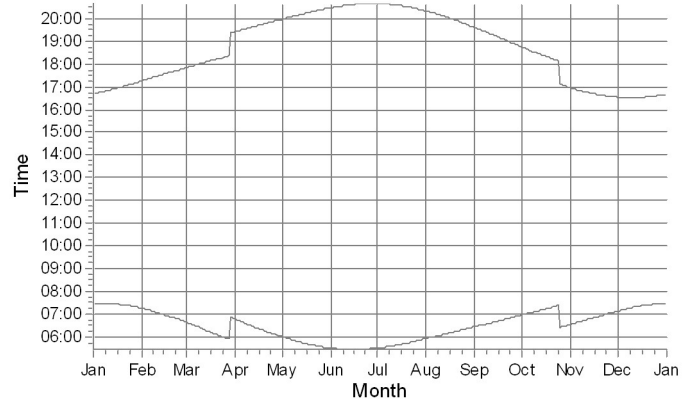
- WTG1: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (5)
- WTG2: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)
- WTG4: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (2)

SHADOW - Calendar, graphical

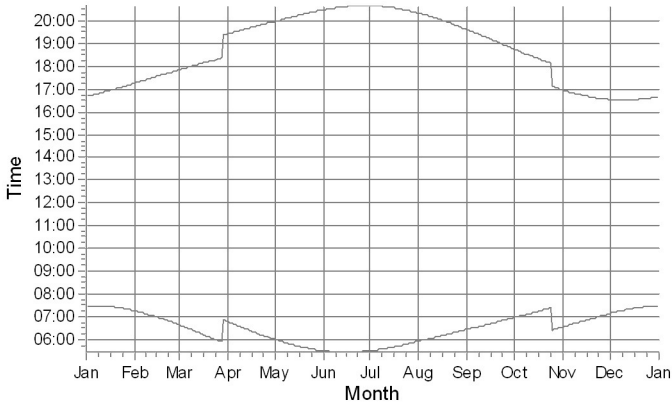
fg 14 plla 193: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (62)



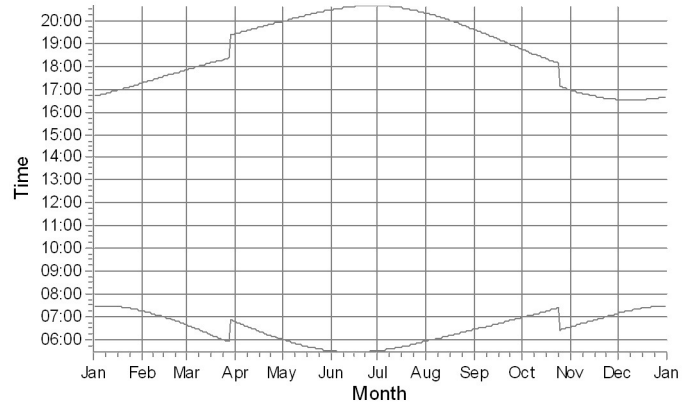
fg 14 plla 199: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (72)



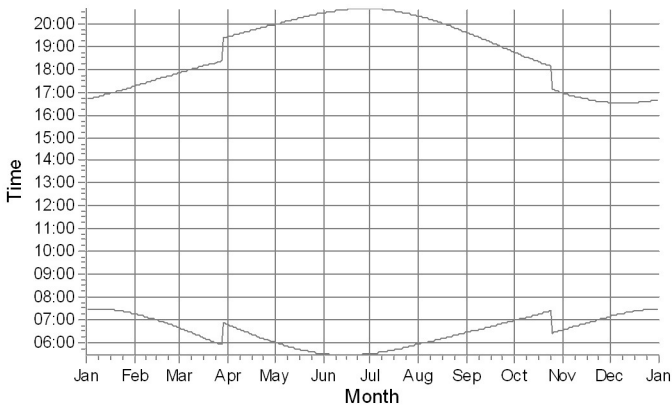
fg 15 plla 337: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (9)



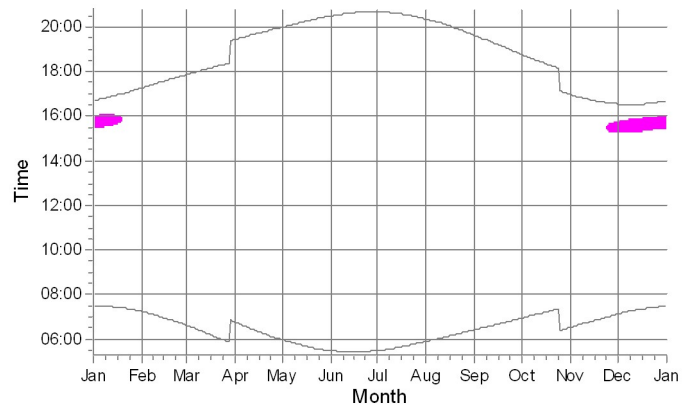
fg 15 plla 338: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (10)



fg 15 plla 341: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (7)



fg 15 plla 380: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (8)

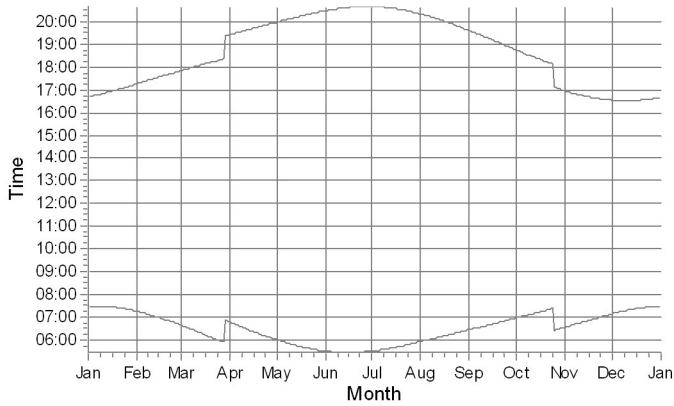


WTGs

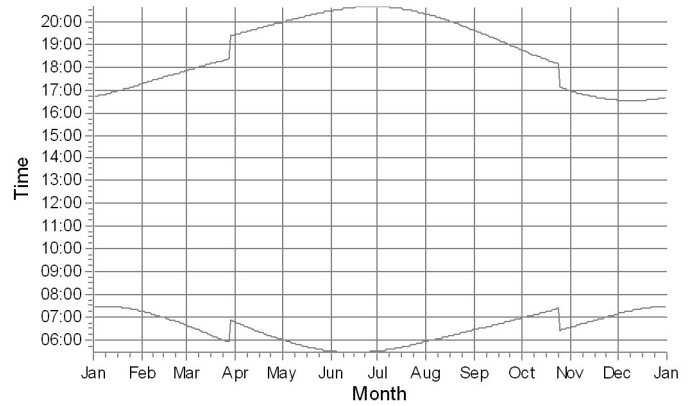
WTG5: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

SHADOW - Calendar, graphical

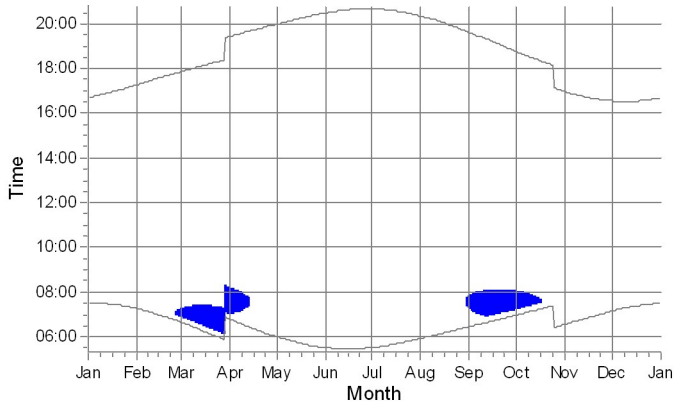
fg 22 plla 172: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (43)



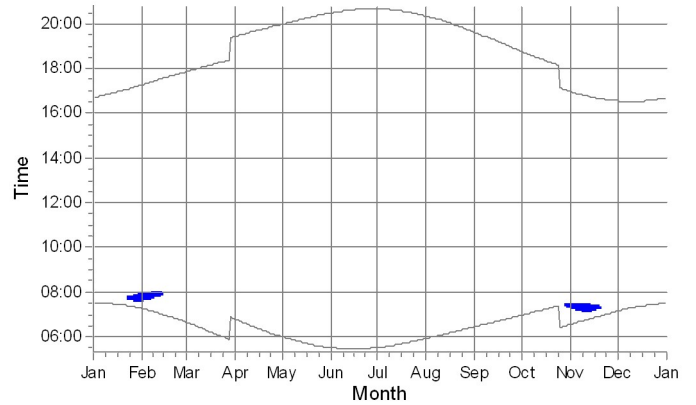
fg 22 plla 172: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (44)



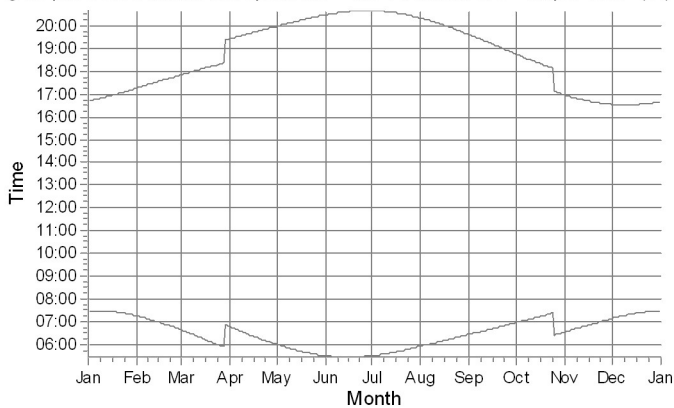
fg 22 plla 173: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (40)



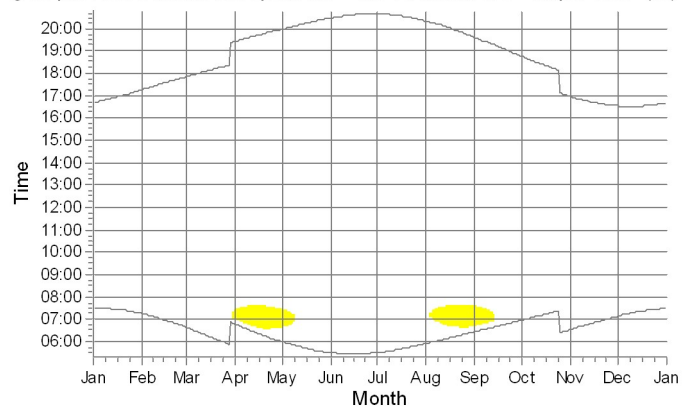
fg 22 plla 181: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (42)



fg 23 plla 508: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (31)



fg 26 plla 203: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (66)

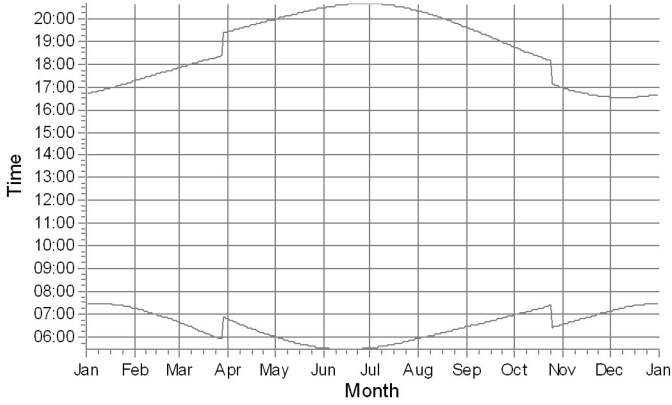


WTGs

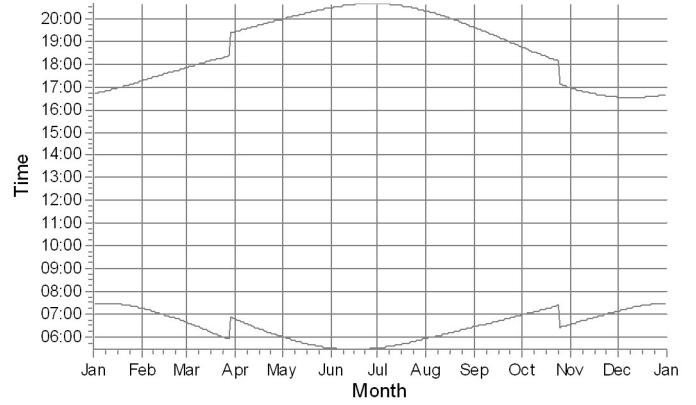
- WTG2: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)
- WTG3: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)

SHADOW - Calendar, graphical

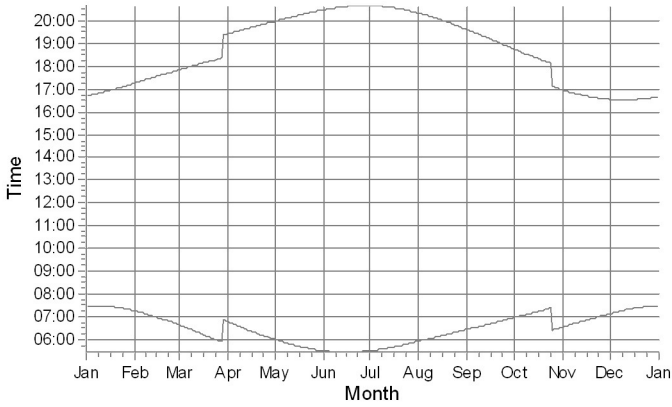
fg 26 plla 205: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (67)



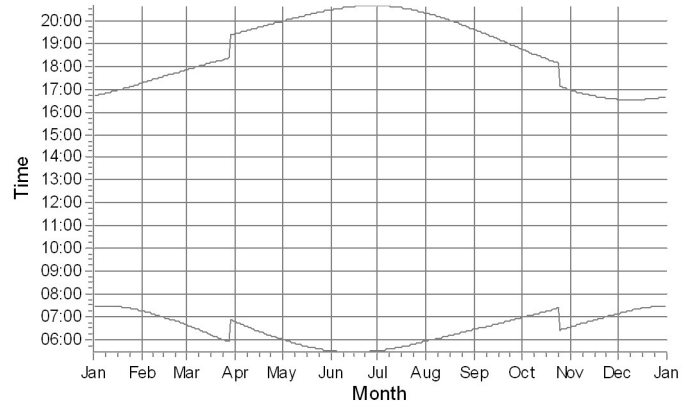
fg 27 plla 196: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (48)



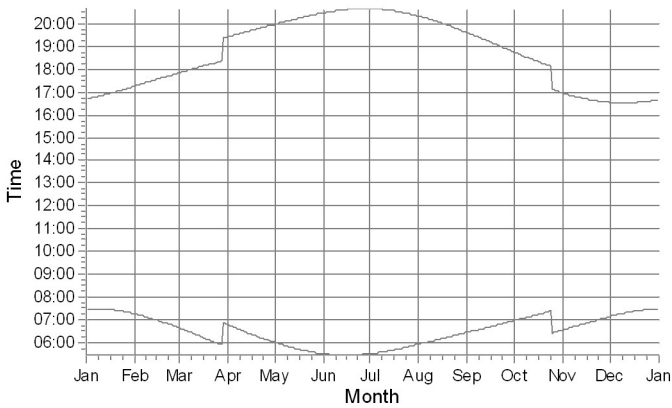
fg 27 plla 73: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (46)



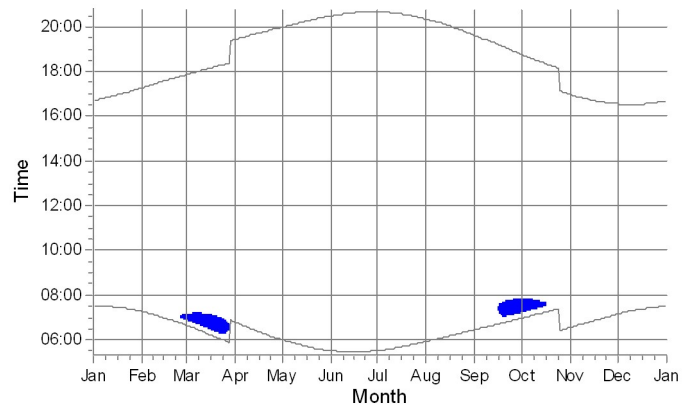
fg 27 plla 73: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (47)



fg 28 plla 326: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (39)



fg 28 plla 327: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (41)

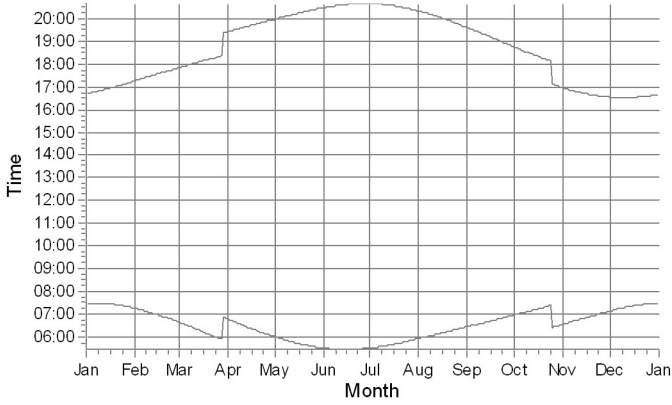


WTGs

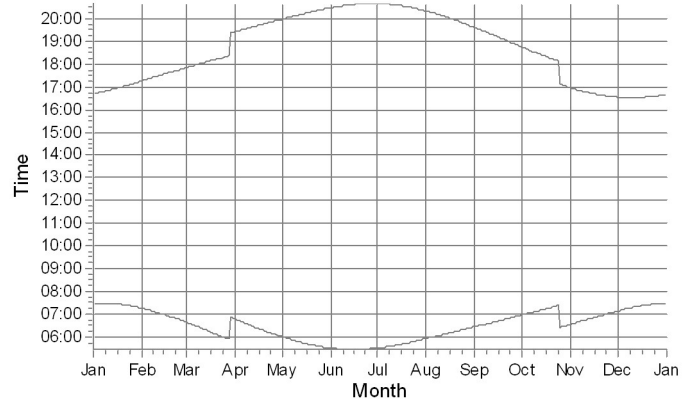
WTG3: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)

SHADOW - Calendar, graphical

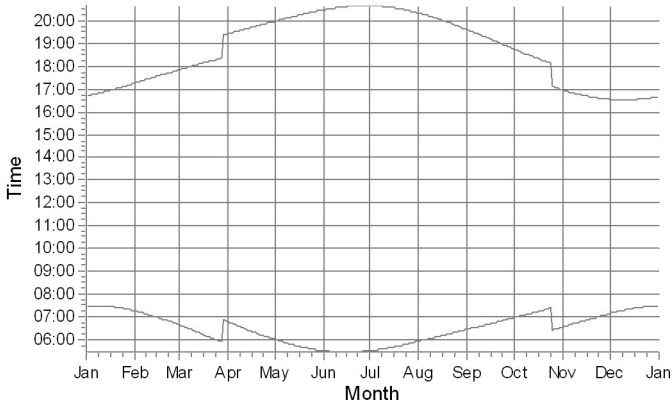
fg 28 plla 342: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (36)



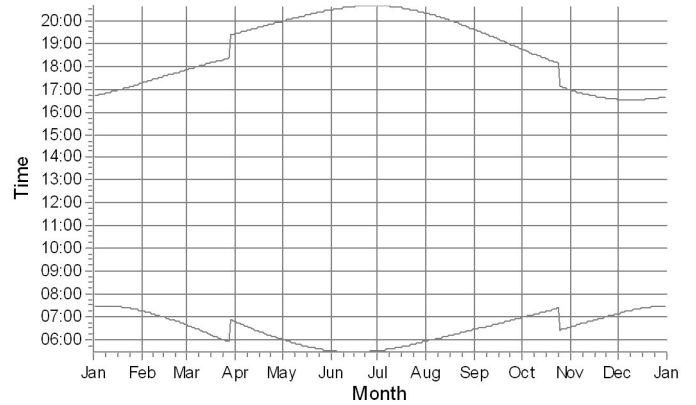
fg 28 plla 345: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (49)



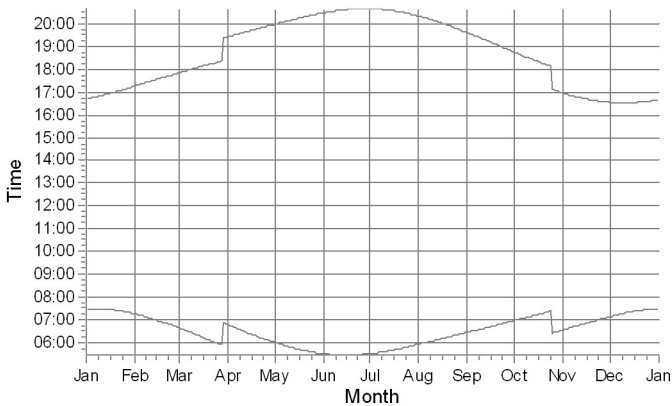
fg 28 plla 346: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (45)



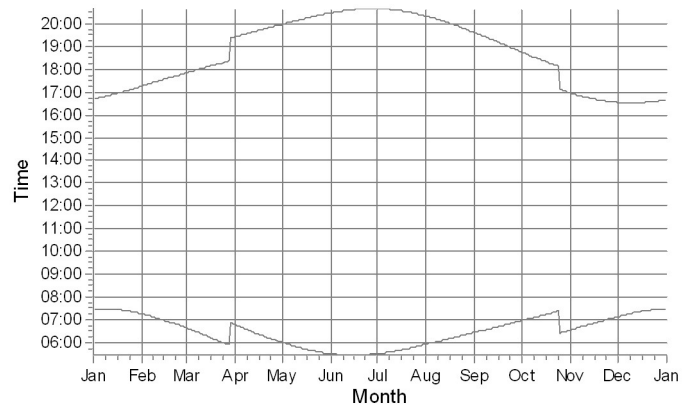
fg 29 plla 325: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (33)



fg 29 plla 325: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (34)



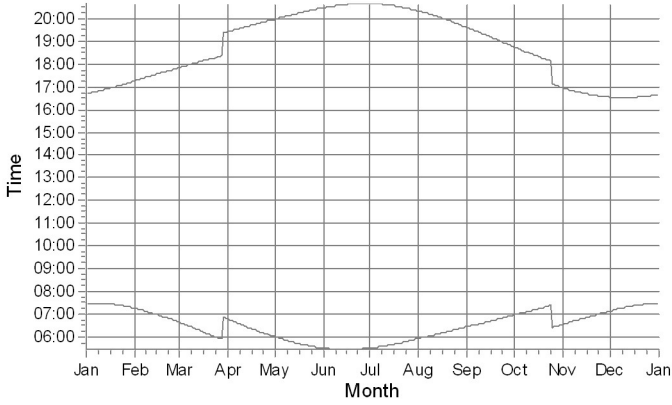
fg 29 plla 325: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (35)



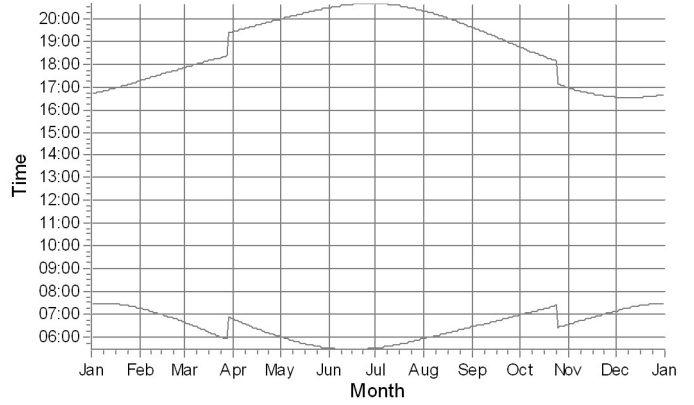
WTGs

SHADOW - Calendar, graphical

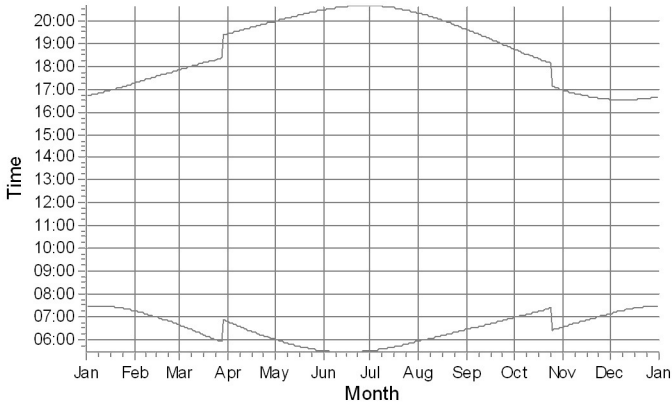
fg 29 plla 335: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (32)



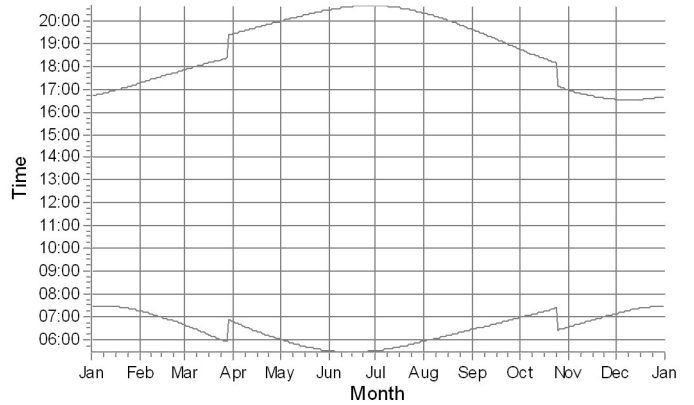
fg 29 plla 35: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (38)



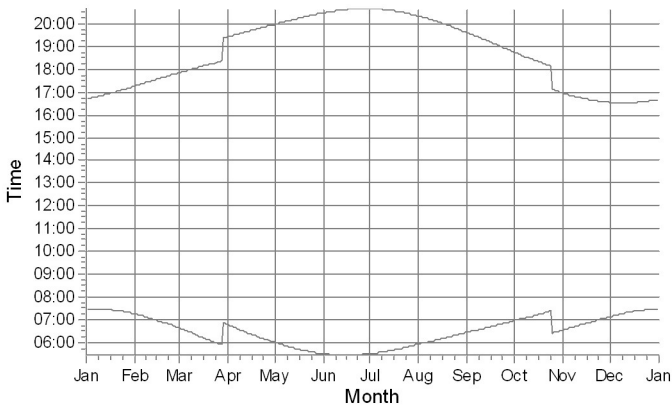
fg 29 plla 36: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (37)



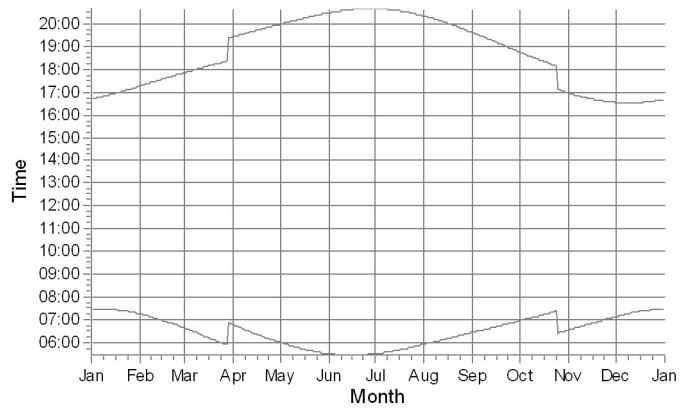
fg 3 plla 236: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (50)



fg 36 plla 209: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (65)



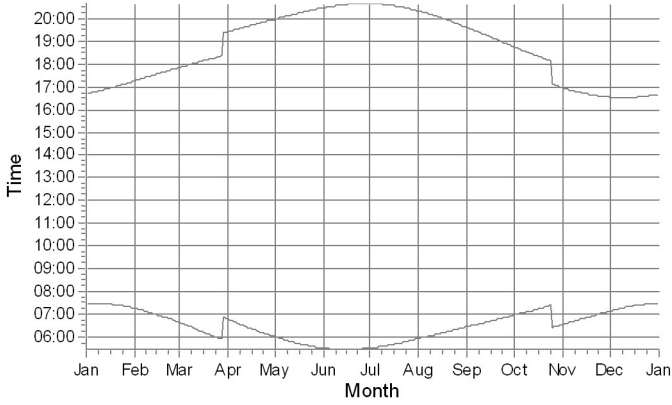
fg 36 plla 211: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (64)



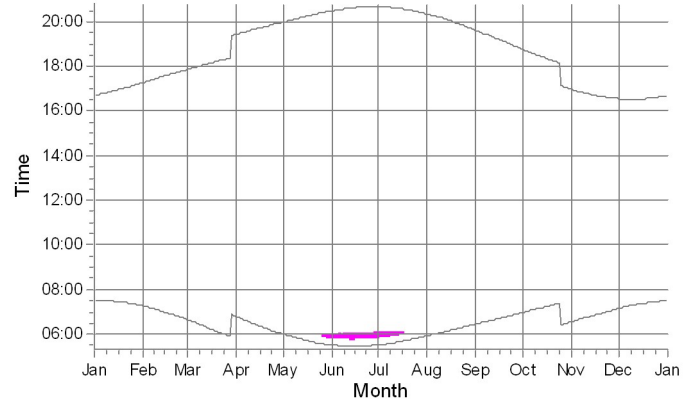
WTGs

SHADOW - Calendar, graphical

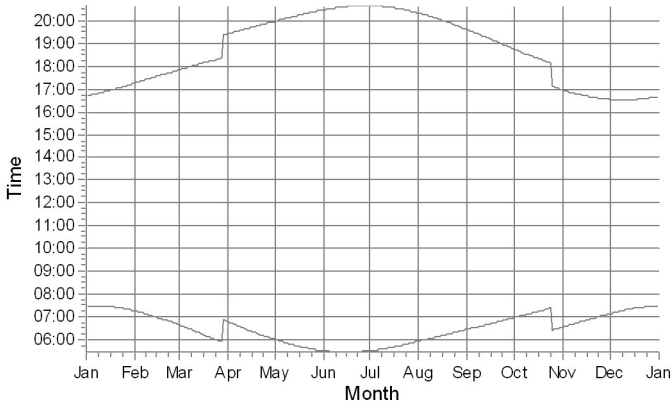
fg 37 plla 368: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (63)



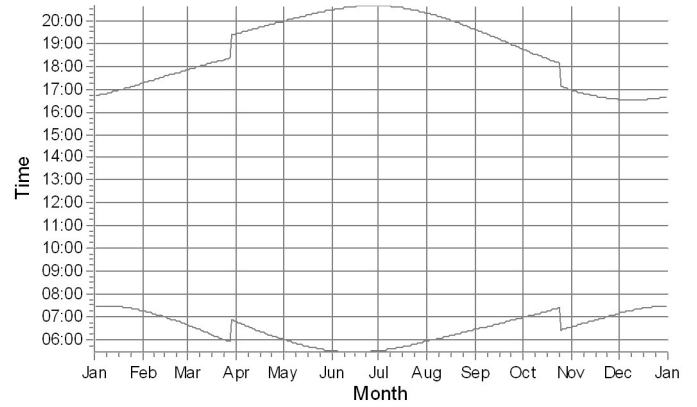
fg 4 plla 156: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (25)



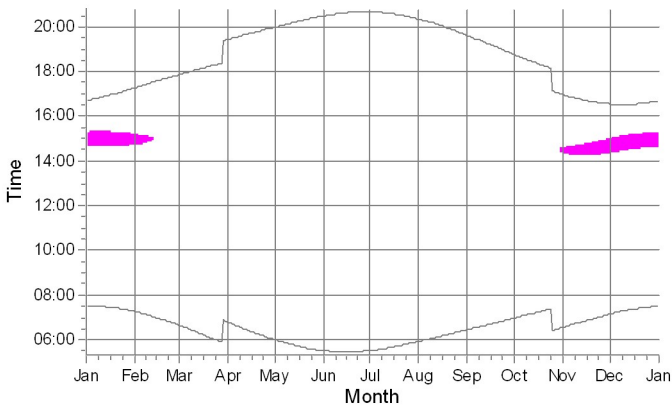
fg 4 plla 6: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (71)



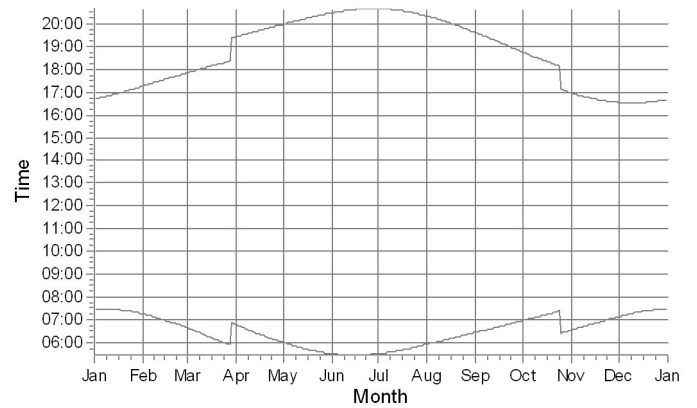
fg 5 plla 108: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (26)



fg 6 plla 14: Shadow Receptor: 1,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (2)



fg 6 plla 264: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (68)

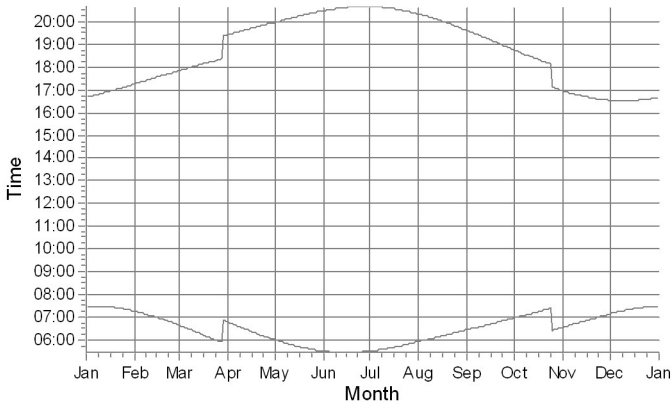


WTGs

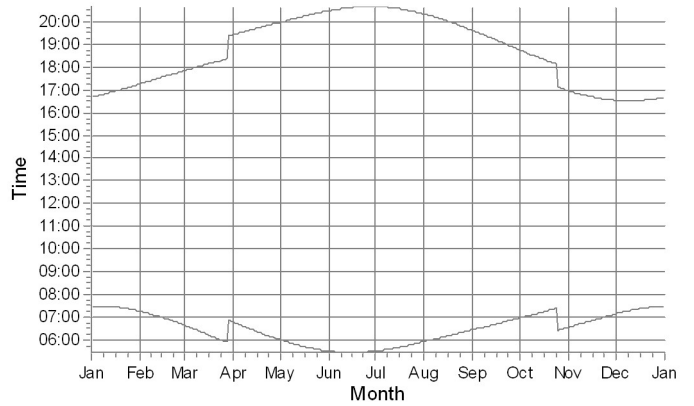
WTG5: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

SHADOW - Calendar, graphical

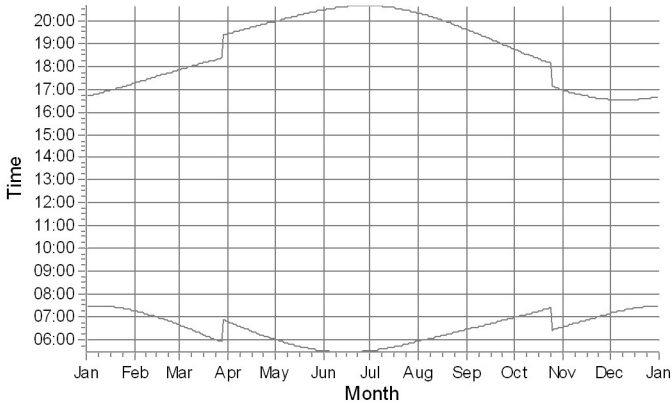
fg 63 plla 71: Shadow Receptor: 1,0 × 3,0 Azimuth: 0,0° Slope: 90,0° (1)



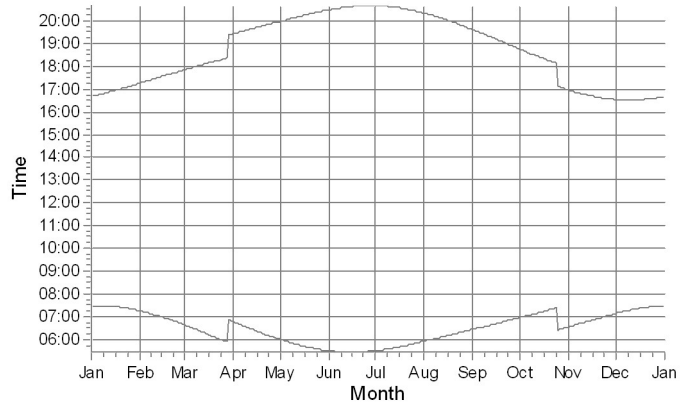
fg 63 plla 255: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (18)



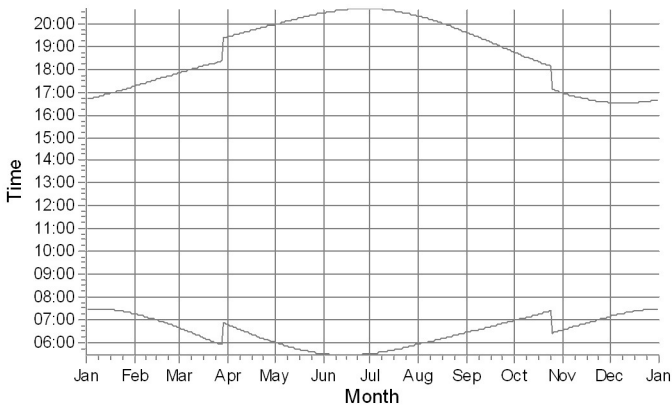
fg 63 plla 255: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (19)



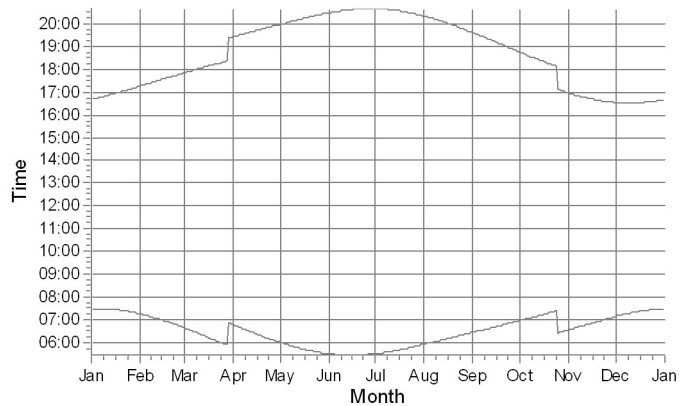
fg 63 plla 255: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (20)



fg 63 plla 342: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (15)



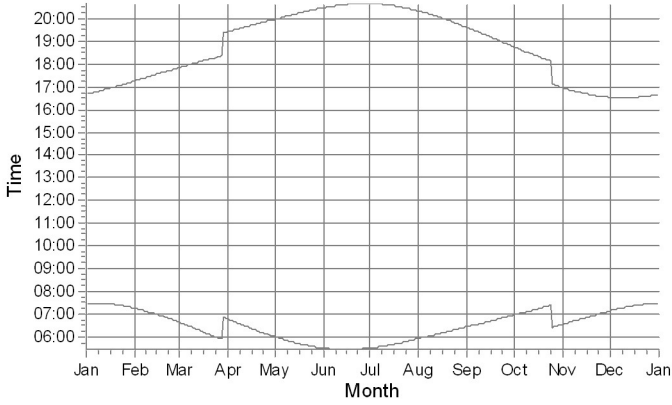
fg 63 plla 358: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (16)



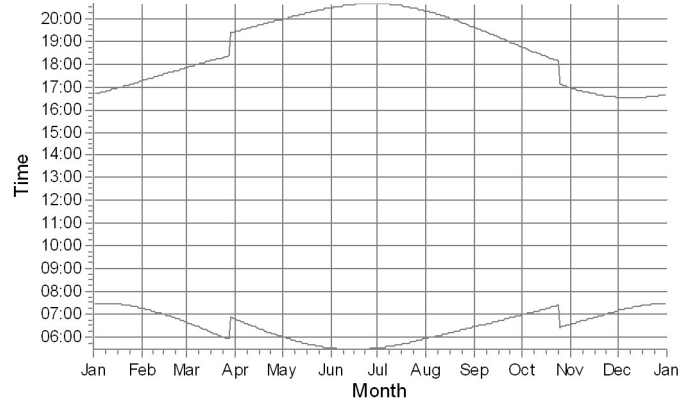
WTGs

SHADOW - Calendar, graphical

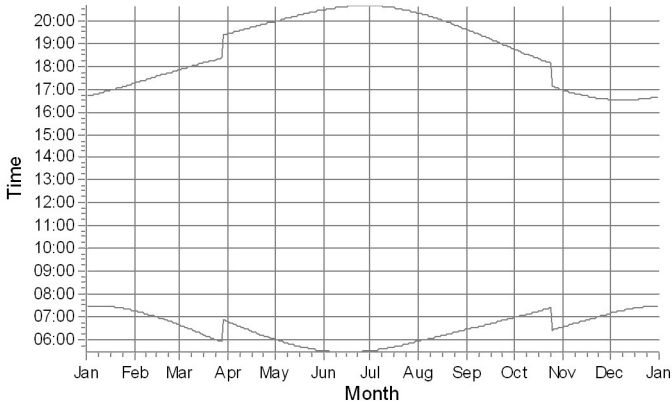
fg 63 p.lla 358: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (17)



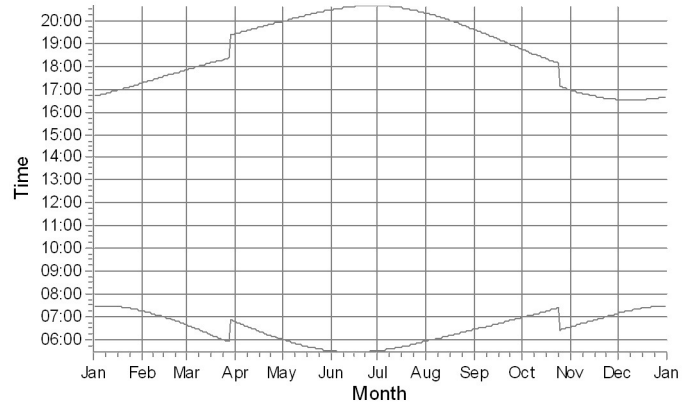
fg 64 p.lla 163: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (11)



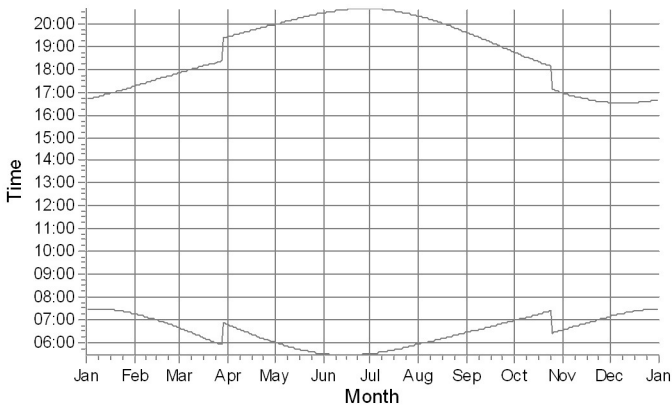
fg 64 p.lla 175: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (14)



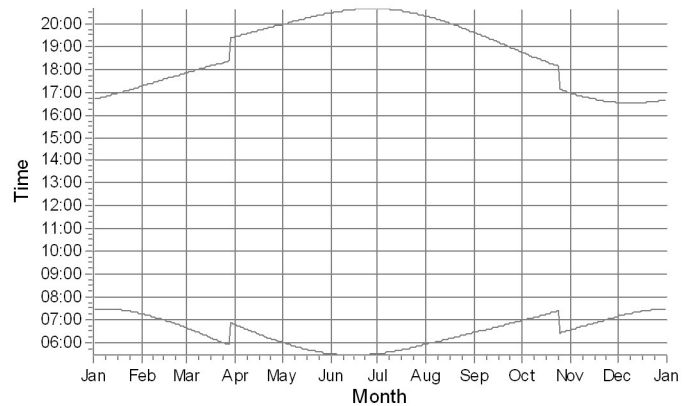
fg 64 p.lla 181: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (12)



fg 64 p.lla 182: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (13)



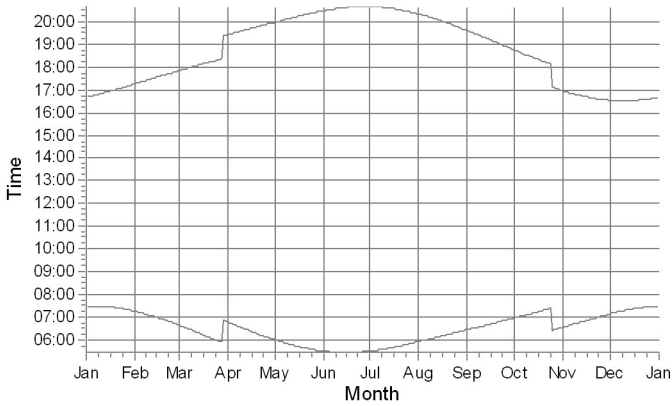
fg 68 p.lla 157: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (24)



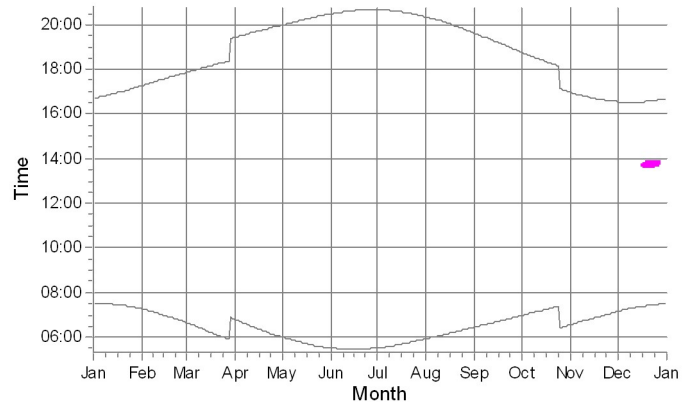
WTGs

SHADOW - Calendar, graphical

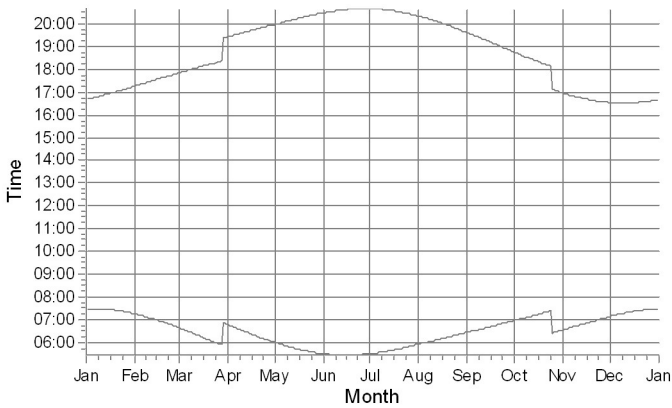
fg 68 plla 181: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (4)



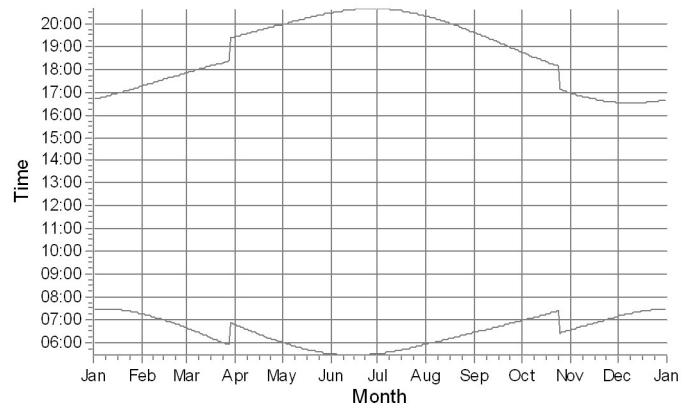
fg 68 plla 187: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (5)



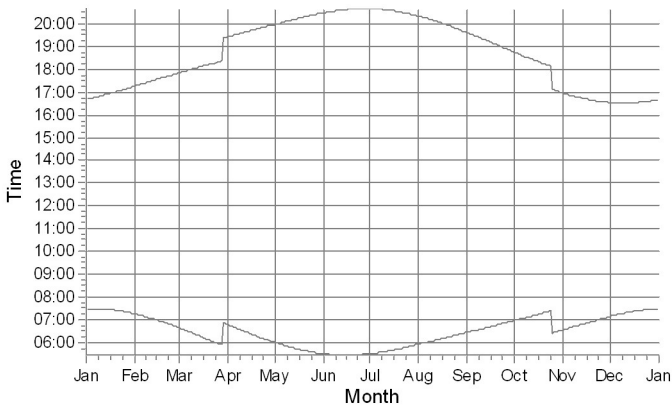
fg 68 plla 189: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (6)



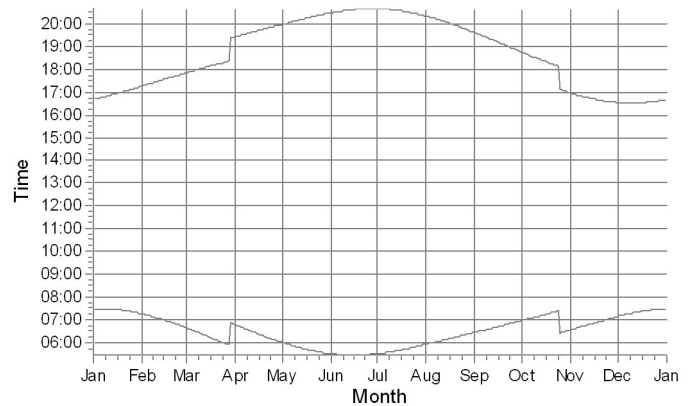
fg 68 plla 190: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (23)



fg 68 plla 195: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (21)



fg 68 plla 73: Shadow Receptor: 1,0 × 2,0 Azimuth: 0,0° Slope: 90,0° (3)

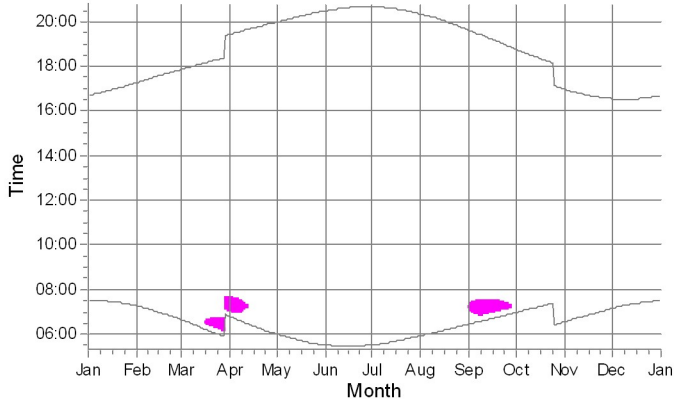


WTGs

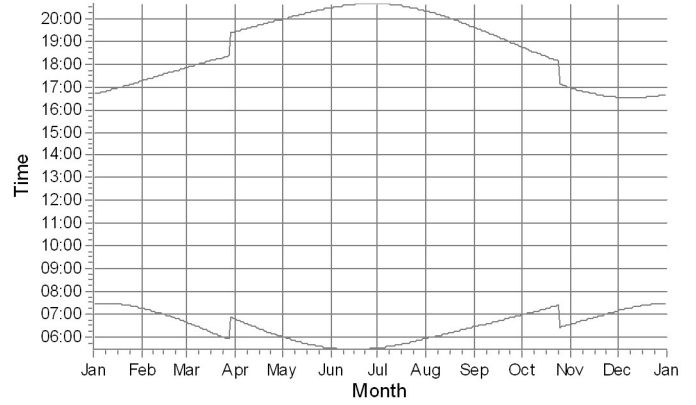
WTG5: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

SHADOW - Calendar, graphical

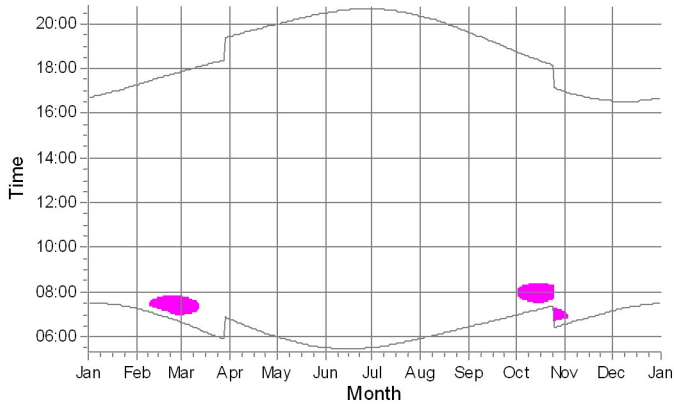
fg 69 plla 219: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (75)



fg 69 plla 221: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (73)



fg 69 plla 221: Shadow Receptor: 1,0 × 1,0 Azimuth: 0,0° Slope: 90,0° (74)



WTGs

WTG5: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

SHADOW - Calendar per WTG

WTG: WTG1 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (5)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 4,21 4,83 5,24 6,37 6,76 8,17 9,01 9,23 7,23 4,84 4,00 3,35

Operational time

N NNE ENE E ESE SSE S SSW WSW W WNW NNW Sum
 1.655 499 195 149 183 260 364 690 1.142 799 427 1.435 7.799
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:51	06:46 19:26	05:59 19:58	05:30 20:28	05:30 20:39	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	07:08 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:31 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	07:09 16:32
3	07:28 16:43	07:12 17:18	06:34 17:53	06:43 19:28	05:57 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:55	07:10 16:31
4	07:28 16:44	07:11 17:20	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:32 20:39	05:57 20:17	06:29 19:31	07:00 18:40	06:36 16:53	07:11 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	07:12 16:31
6	07:28 16:45	07:09 17:22	06:30 17:56	06:38 19:31	05:53 20:04	05:28 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	06:28 17:58	06:36 19:32	05:52 20:05	05:27 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:35	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:25	06:26 17:59	06:34 19:33	05:50 20:06	05:27 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	06:25 18:00	06:33 19:34	05:49 20:07	05:27 20:34	05:35 20:38	06:02 20:10	06:34 19:23	07:06 18:31	06:42 16:48	07:15 16:31
10	07:28 16:49	07:04 17:27	06:23 18:01	06:31 19:35	05:48 20:08	05:27 20:34	05:35 20:37	06:04 20:09	06:35 19:21	07:07 18:30	06:43 16:47	07:16 16:31
11	07:28 16:50	07:03 17:28	06:21 18:02	06:29 19:36	05:47 20:09	05:27 20:35	05:36 20:37	06:05 20:08	06:36 19:19	07:08 18:28	06:44 16:46	07:17 16:31
12	07:27 16:52	07:02 17:30	06:20 18:03	06:28 19:38	05:46 20:10	05:26 20:36	05:37 20:36	06:06 20:06	06:37 19:17	07:09 18:26	06:45 16:45	07:18 16:31
13	07:27 16:53	07:01 17:31	06:18 18:04	06:26 19:39	05:45 20:11	05:26 20:36	05:38 20:36	06:07 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	06:16 18:06	06:24 19:40	05:44 20:12	05:26 20:36	05:38 20:35	06:08 20:04	06:39 18:01-18:12/11	07:11 18:23	06:48 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	06:15 18:07	06:23 19:41	05:43 20:13	05:26 20:37	05:39 20:35	06:09 20:02	06:40 17:58-18:13/15	07:12 18:22	06:49 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	06:13 18:08	06:21 19:42	05:42 20:14	05:26 20:37	05:40 20:34	06:10 20:01	06:41 17:57-18:14/17	07:13 18:20	06:50 16:41	07:21 16:32
17	07:25 16:57	06:55 17:36	06:11 18:09	06:20 19:43	05:41 20:15	05:26 20:38	05:41 20:33	06:11 19:59	06:42 17:55-18:15/20	07:14 18:18	06:51 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	06:10 18:10	06:18 19:44	05:40 20:16	05:26 20:38	05:42 20:33	06:12 19:58	06:43 17:54-18:15/21	07:16 18:17	06:53 16:39	07:22 16:32
19	07:24 17:00	06:52 17:38	06:08 18:11	06:17 19:45	05:39 20:17	05:26 20:38	05:42 20:32	06:13 19:56	06:44 17:53-18:15/22	07:17 18:15	06:54 16:39	07:23 16:33
20	07:24 17:01	06:51 17:40	06:06 18:12	06:15 19:46	05:38 20:18	05:27 20:39	05:43 20:31	06:14 19:55	06:45 17:53-18:15/22	07:18 18:14	06:55 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	06:05 18:13	06:14 19:47	05:37 20:19	05:27 20:39	05:44 20:30	06:15 19:54	06:46 17:52-18:14/22	07:19 18:12	06:56 16:37	07:24 16:34
22	07:23 17:03	06:48 17:42	06:03 18:15	06:12 19:48	05:36 20:20	05:27 20:39	05:45 20:30	06:16 19:52	06:48 17:52-18:14/22	07:20 18:11	06:57 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	06:01 18:16	06:11 19:50	05:35 20:21	05:27 20:39	05:46 20:29	06:17 19:50	06:49 17:52-18:13/21	07:21 18:09	06:59 16:36	07:25 16:35
24	07:21 17:06	06:45 17:45	05:59 18:17	06:09 19:51	05:35 20:22	05:27 20:39	05:47 20:28	06:18 19:49	06:50 17:53-18:12/19	07:22 18:08	07:00 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	05:58 18:18	06:08 19:52	05:34 20:23	05:28 20:40	05:48 20:27	06:19 19:47	06:51 17:53-18:10/17	07:24 17:07	07:01 16:35	07:26 16:36
26	07:20 17:08	06:42 17:47	05:56 18:19	06:06 19:53	05:33 20:23	05:28 20:40	05:49 20:26	06:20 19:46	06:52 17:55-18:08/13	07:25 17:05	07:02 16:34	07:27 16:36
27	07:19 17:09	06:41 17:48	05:54 18:20	06:05 19:54	05:33 20:24	05:28 20:40	05:50 20:25	06:21 19:44	06:53 17:57-18:05/8	07:26 17:04	07:03 16:34	07:27 16:37
28	07:18 17:11	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:51 20:24	06:22 19:43	06:54 18:50	07:27 17:02	07:04 16:33	07:27 16:38
29	07:17 17:12	06:37 17:49	05:51 18:22	06:02 19:56	05:31 20:26	05:29 20:40	05:52 20:23	06:23 19:41	06:55 18:48	07:28 17:01	07:05 16:33	07:28 16:38
30	07:16 17:13	06:49 17:49	06:49 18:14-18:17/3	06:01 19:57	05:31 20:27	05:30 20:40	05:53 20:22	06:24 19:39	06:56 18:46	07:30 17:00	07:07 16:32	07:28 16:39
31	07:15 17:14	06:48 19:24	06:48 19:24	06:48 19:24	06:48 19:24	06:48 19:24	06:48 19:24	06:48 19:24	06:48 19:24	06:31 16:58	07:28 16:40	07:28 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	297	286
Sum of minutes with flicker	0	0	246	0	0	0	0	0	250	0	0	0

Table layout: For each day in each month the following matrix apply

Day in month Sun rise (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker
 Sun set (hh:mm) First time (hh:mm) with flicker-Last time (hh:mm) with flicker/Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG2 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 15:34-15:43/9 16:41	07:14 15:30-15:39/9 17:16	06:38 17:51	06:46 07:05-07:22/17 19:25	05:59 06:42-07:22/40 19:58	05:30 20:28
2	07:28 15:34-15:44/10 16:42	07:13 17:17	06:36 17:52	06:44 07:03-07:24/21 19:27	05:58 06:43-07:20/37 19:59	05:29 20:29
3	07:28 15:34-15:45/11 16:43	07:12 17:18	06:34 17:53	06:42 07:01-07:26/25 19:28	05:57 06:44-07:19/35 20:00	05:29 20:30
4	07:28 15:35-15:45/10 16:43	07:11 17:19	06:33 17:54	06:41 06:59-07:27/28 19:29	05:55 06:46-07:17/31 20:01	05:28 20:31
5	07:28 15:35-15:46/11 16:44	07:10 17:21	06:31 17:55	06:39 06:58-07:29/31 19:30	05:54 06:47-07:16/29 20:02	05:28 20:31
6	07:28 15:35-15:46/11 16:45	07:09 17:22	06:30 17:56	06:37 06:56-07:30/34 19:31	05:53 06:49-07:14/25 20:04	05:28 20:32
7	07:28 15:35-15:47/12 16:46	07:08 17:23	06:28 17:58	06:36 06:54-07:30/36 19:32	05:52 06:51-07:10/19 20:05	05:27 20:33
8	07:28 15:34-15:47/13 16:47	07:07 17:25	06:26 17:59	06:34 06:53-07:31/38 19:33	05:50 06:55-07:07/12 20:06	05:27 20:33
9	07:28 15:35-15:47/12 16:48	07:05 17:26	06:25 18:00	06:33 06:51-07:31/40 19:34	05:49 20:07	05:27 20:34
10	07:28 15:35-15:48/13 16:49	07:04 17:27	06:23 18:01	06:31 06:50-07:32/42 19:35	05:48 20:08	05:27 20:34
11	07:28 15:34-15:48/14 16:50	07:03 17:28	06:21 18:02	06:29 06:48-07:32/44 19:36	05:47 20:09	05:26 20:35
12	07:27 15:34-15:49/15 16:52	07:02 17:30	06:20 18:03	06:28 06:46-07:32/46 19:37	05:46 20:10	05:26 20:35
13	07:27 15:34-15:49/15 16:53	07:01 17:31	06:18 18:04	06:26 06:45-07:33/48 19:39	05:45 20:11	05:26 20:36
14	07:27 15:34-15:49/15 16:54	06:59 17:32	06:16 18:06	06:24 06:43-07:32/49 19:40	05:44 20:12	05:26 20:36
15	07:26 15:34-15:50/16 16:55	06:58 17:33	06:15 18:07	06:23 06:42-07:33/51 19:41	05:43 20:13	05:26 20:37
16	07:26 15:33-15:50/17 16:56	06:57 17:35	06:13 18:08	06:21 06:40-07:32/52 19:42	05:42 20:14	05:26 20:37
17	07:25 15:34-15:50/16 16:57	06:55 17:36	06:11 18:09	06:20 06:39-07:33/54 19:43	05:41 20:15	05:26 20:38
18	07:25 15:33-15:50/17 16:58	06:54 17:37	06:10 18:10	06:18 06:38-07:32/54 19:44	05:40 20:16	05:26 20:38
19	07:24 15:32-15:50/18 17:00	06:52 17:38	06:08 18:11	06:17 06:38-07:32/54 19:45	05:39 20:17	05:26 20:38
20	07:24 15:32-15:51/19 17:01	06:51 17:40	06:06 18:12	06:15 06:37-07:31/54 19:46	05:38 20:18	05:26 20:39
21	07:23 15:32-15:50/18 17:02	06:50 17:41	06:05 18:13	06:14 06:38-07:31/53 19:47	05:37 20:19	05:27 20:39
22	07:22 15:31-15:50/19 17:03	06:48 17:42	06:03 18:15	06:12 06:37-07:30/53 19:48	05:36 20:20	05:27 20:39
23	07:22 15:31-15:50/19 17:04	06:47 17:43	06:01 18:16	06:11 06:38-07:30/52 19:49	05:35 20:21	05:27 20:39
24	07:21 15:31-15:50/19 17:06	06:45 17:45	05:59 18:17	06:09 06:38-07:29/51 19:51	05:35 20:22	05:27 20:39
25	07:20 15:30-15:49/19 17:07	06:44 17:46	05:58 18:18	06:08 06:38-07:28/50 19:52	05:34 20:23	05:28 20:39
26	07:20 15:29-15:48/19 17:08	06:42 17:47	05:56 18:19	06:06 06:38-07:27/49 19:53	05:33 20:23	05:28 20:40
27	07:19 15:29-15:48/19 17:09	06:41 17:48	05:54 18:20	06:05 06:39-07:26/47 19:54	05:33 20:24	05:28 20:40
28	07:18 15:28-15:47/19 17:11	06:39 17:49	05:53 18:21	06:03 06:40-07:26/46 19:55	05:32 20:25	05:29 20:40
29	07:17 15:27-15:46/19 17:12		06:51 19:22	06:02 06:40-07:24/44 19:56	05:31 20:26	05:29 20:40
30	07:16 15:28-15:45/17 17:13		06:49 19:23	06:01 06:41-07:23/42 19:57	05:31 20:27	05:30 20:40
31	07:15 15:27-15:43/16 17:14		06:48 07:06-07:18/12 19:24		05:30 20:28	
Potential sun hours	296	296	369	399	450	454
Sum of minutes with flicker	477	9	12	1305	228	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG2 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30 20:39	05:54 20:20	06:26 06:47-07:31/44 19:36	06:57 18:45	06:32 16:57	07:08 15:16-15:30/14 16:32
2	05:31 20:39	05:55 20:19	06:27 06:48-07:30/42 19:34	06:58 18:43	06:33 16:56	07:09 15:18-15:31/13 16:32
3	05:31 20:39	05:56 20:18	06:28 06:49-07:29/40 19:33	06:59 18:41	06:34 16:55	07:10 15:19-15:32/13 16:31
4	05:32 20:39	05:57 07:10-07:13/3 20:17	06:29 06:50-07:28/38 19:31	07:00 18:40	06:36 16:53	07:11 15:19-15:32/13 16:31
5	05:32 20:39	05:58 07:04-07:19/15 20:15	06:30 06:51-07:27/36 19:29	07:01 18:38	06:37 16:52	07:12 15:20-15:32/12 16:31
6	05:33 20:38	05:59 07:01-07:22/21 20:14	06:31 06:52-07:26/34 19:28	07:02 18:36	06:38 16:51	07:13 15:21-15:32/11 16:31
7	05:33 20:38	06:00 06:58-07:24/26 20:13	06:32 06:53-07:24/31 19:26	07:03 18:34	06:39 16:50	07:14 15:22-15:33/11 16:31
8	05:34 20:38	06:01 06:56-07:26/30 20:12	06:33 06:54-07:22/28 19:24	07:04 18:33	06:40 16:49	07:15 15:23-15:33/10 16:31
9	05:35 20:37	06:02 06:55-07:28/33 20:10	06:34 06:55-07:20/25 19:23	07:05 18:31	06:42 16:48	07:15 15:22-15:33/11 16:31
10	05:35 20:37	06:03 06:53-07:29/36 20:09	06:35 06:56-07:18/22 19:21	07:07 18:30	06:43 15:00-15:10/10 16:47	07:16 15:23-15:33/10 16:31
11	05:36 20:37	06:04 06:51-07:29/38 20:08	06:36 06:57-07:15/18 19:19	07:08 18:28	06:44 14:58-15:14/16 16:46	07:17 15:24-15:34/10 16:31
12	05:37 20:36	06:06 06:50-07:30/40 20:06	06:37 06:58-07:10/12 19:17	07:09 18:26	06:45 14:59-15:16/17 16:45	07:18 15:25-15:34/9 16:31
13	05:38 20:36	06:07 06:48-07:31/43 20:05	06:38 19:16	07:10 18:25	06:47 14:59-15:18/19 16:44	07:19 15:26-15:35/9 16:31
14	05:38 20:35	06:08 06:47-07:32/45 20:04	06:39 19:14	07:11 18:23	06:48 15:01-15:20/19 16:43	07:20 15:27-15:35/8 16:31
15	05:39 20:35	06:09 06:46-07:33/47 20:02	06:40 19:12	07:12 18:21	06:49 15:02-15:21/19 16:42	07:20 15:27-15:35/8 16:31
16	05:40 20:34	06:10 06:46-07:33/47 20:01	06:41 19:11	07:13 18:20	06:50 15:02-15:21/19 16:41	07:21 15:28-15:36/8 16:32
17	05:41 20:33	06:11 06:45-07:34/49 19:59	06:42 19:09	07:14 18:18	06:51 15:04-15:23/19 16:40	07:22 15:29-15:36/7 16:32
18	05:42 20:33	06:12 06:44-07:34/50 19:58	06:43 19:07	07:16 18:17	06:53 15:05-15:24/19 16:39	07:22 15:29-15:36/7 16:32
19	05:42 20:32	06:13 06:43-07:34/51 19:56	06:44 19:05	07:17 18:15	06:54 15:05-15:24/19 16:39	07:23 15:30-15:37/7 16:33
20	05:43 20:31	06:14 06:43-07:35/52 19:55	06:45 19:04	07:18 18:14	06:55 15:06-15:25/19 16:38	07:24 15:29-15:37/8 16:33
21	05:44 20:30	06:15 06:42-07:35/53 19:53	06:46 19:02	07:19 18:12	06:56 15:08-15:26/18 16:37	07:24 15:30-15:38/8 16:33
22	05:45 20:30	06:16 06:42-07:35/53 19:52	06:47 19:00	07:20 18:11	06:57 15:08-15:27/19 16:36	07:25 15:30-15:38/8 16:34
23	05:46 20:29	06:17 06:41-07:35/54 19:50	06:49 18:58	07:21 18:09	06:59 15:09-15:27/18 16:36	07:25 15:31-15:39/8 16:34
24	05:47 20:28	06:18 06:41-07:35/54 19:49	06:50 18:57	07:22 18:08	07:00 15:10-15:27/17 16:35	07:26 15:32-15:39/7 16:35
25	05:48 20:27	06:19 06:40-07:35/55 19:47	06:51 18:55	07:24 17:06	07:01 15:12-15:28/16 16:35	07:26 15:33-15:40/7 16:36
26	05:49 20:26	06:20 06:41-07:35/54 19:46	06:52 18:53	07:25 17:05	07:02 15:12-15:29/17 16:34	07:26 15:33-15:40/7 16:36
27	05:50 20:25	06:21 06:42-07:34/52 19:44	06:53 18:51	07:26 17:04	07:03 15:13-15:29/16 16:34	07:27 15:33-15:40/7 16:37
28	05:51 20:24	06:22 06:43-07:34/51 19:43	06:54 18:50	07:27 17:02	07:04 15:14-15:29/15 16:33	07:27 15:33-15:41/8 16:38
29	05:51 20:23	06:23 06:44-07:33/49 19:41	06:55 18:48	07:28 17:01	07:05 15:15-15:29/14 16:33	07:27 15:34-15:42/8 16:38
30	05:52 20:22	06:24 06:45-07:33/48 19:39	06:56 18:46	07:30 17:00	07:06 15:15-15:30/15 16:32	07:28 15:34-15:42/8 16:39
31	05:53 20:21	06:25 06:46-07:32/46 19:38		07:31 16:58		07:28 15:34-15:43/9 16:40
Potential sun hours	461	429	375	345	297	286
Sum of minutes with flicker	0	1195	370	0	360	284

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG3 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:28 16:41	07:14 07:38-07:53/15 17:16	06:37 06:57-07:11/14 17:50	06:46 07:04-08:07/63 19:25	05:59 19:58	05:30 20:28
2	07:28 16:42	07:13 07:40-07:54/14 17:17	06:36 06:55-07:12/17 17:52	06:44 07:06-08:07/61 19:27	05:58 19:59	05:29 20:29
3	07:28 16:42	07:12 07:40-07:53/13 17:18	06:34 06:53-07:13/20 17:53	06:42 07:06-08:05/59 19:28	05:56 20:00	05:29 20:30
4	07:28 16:43	07:11 07:42-07:54/12 17:19	06:33 06:52-07:15/23 17:54	06:41 07:07-08:03/56 19:29	05:55 20:01	05:28 20:31
5	07:28 16:44	07:10 07:43-07:54/11 17:21	06:31 06:50-07:15/25 17:55	06:39 07:09-08:02/53 19:30	05:54 20:03	05:28 20:31
6	07:28 16:45	07:09 07:45-07:55/10 17:22	06:30 06:49-07:17/28 17:56	06:37 07:09-08:00/51 19:31	05:53 20:04	05:27 20:32
7	07:28 16:46	07:08 07:46-07:55/9 17:23	06:28 06:47-07:17/30 17:57	06:36 07:10-07:57/47 19:32	05:51 20:05	05:27 20:33
8	07:28 16:47	07:07 07:48-07:56/8 17:24	06:26 06:45-07:18/33 17:59	06:34 07:13-07:56/43 19:33	05:50 20:06	05:27 20:33
9	07:28 16:48	07:05 07:48-07:55/7 17:26	06:25 06:44-07:19/35 18:00	06:32 07:14-07:53/39 19:34	05:49 20:07	05:27 20:34
10	07:28 16:49	07:04 07:50-07:55/5 17:27	06:23 06:42-07:19/37 18:01	06:31 07:16-07:49/33 19:35	05:48 20:08	05:26 20:34
11	07:28 16:50	07:03 07:51-07:56/5 17:28	06:21 06:40-07:19/39 18:02	06:29 07:20-07:46/26 19:36	05:47 20:09	05:26 20:35
12	07:27 16:51	07:02 07:53-07:56/3 17:30	06:20 06:39-07:20/41 18:03	06:28 07:24-07:41/17 19:37	05:46 20:10	05:26 20:36
13	07:27 16:52	07:01 07:54-07:55/1 17:31	06:18 06:37-07:20/43 18:04	06:26 19:39	05:45 20:11	05:26 20:36
14	07:27 16:54	06:59 17:32	06:16 06:35-07:19/44 18:06	06:24 19:40	05:44 20:12	05:26 20:36
15	07:26 16:55	06:58 17:33	06:15 06:34-07:20/46 18:07	06:23 19:41	05:42 20:13	05:26 20:37
16	07:26 16:56	06:57 17:35	06:13 06:32-07:20/48 18:08	06:21 19:42	05:41 20:14	05:26 20:37
17	07:25 16:57	06:55 17:36	06:11 06:30-07:19/49 18:09	06:20 19:43	05:41 20:15	05:26 20:38
18	07:25 16:58	06:54 17:37	06:10 06:28-07:19/51 18:10	06:18 19:44	05:40 20:16	05:26 20:38
19	07:24 16:59	06:52 17:38	06:08 06:27-07:19/52 18:11	06:16 19:45	05:39 20:17	05:26 20:38
20	07:24 17:01	06:51 17:40	06:06 06:25-07:18/53 18:12	06:15 19:46	05:38 20:18	05:26 20:39
21	07:23 17:02	06:50 17:41	06:04 06:23-07:18/55 18:13	06:13 19:47	05:37 20:19	05:26 20:39
22	07:22 17:03	06:48 17:42	06:03 06:22-07:18/56 18:14	06:12 19:48	05:36 20:20	05:27 20:39
23	07:22 07:43-07:44/1 17:04	06:47 17:43	06:01 06:20-07:17/57 18:16	06:10 19:49	05:35 20:21	05:27 20:39
24	07:21 07:42-07:46/4 17:05	06:45 17:44	05:59 06:18-07:16/58 18:17	06:09 19:51	05:35 20:22	05:27 20:39
25	07:20 07:41-07:46/5 17:07	06:44 17:46	05:58 06:16-07:15/59 18:18	06:07 19:52	05:34 20:23	05:27 20:40
26	07:20 07:40-07:47/7 17:08	06:42 07:01-07:05/4 17:47	05:56 06:15-07:15/60 18:19	06:06 19:53	05:33 20:23	05:28 20:40
27	07:19 07:39-07:48/9 17:09	06:41 07:00-07:08/8 17:48	05:54 06:13-07:14/61 18:20	06:05 19:54	05:32 20:24	05:28 20:40
28	07:18 07:39-07:50/11 17:10	06:39 06:58-07:09/11 17:49	05:53 06:11-07:12/61 18:21	06:03 19:55	05:32 20:25	05:29 20:40
29	07:17 07:38-07:51/13 17:12		06:51 07:10-08:12/62 19:22	06:02 19:56	05:31 20:26	05:29 20:40
30	07:16 07:37-07:52/15 17:13		06:49 07:08-08:11/63 19:23	06:00 19:57	05:31 20:27	05:29 20:40
31	07:15 07:37-07:52/15 17:14		06:47 07:06-08:09/63 19:24		05:30 20:28	
Potential sun hours	296	296	369	399	450	454
Sum of minutes with flicker	80	136	1383	548	0	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG3 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:30 20:39	05:54 20:20	06:26 07:19-07:45/26 19:36	06:57 07:17-07:58/41 18:45	06:32 07:19-07:25/6 16:57	07:08 16:32
2	05:30 20:39	05:55 20:19	06:27 07:15-07:48/33 19:34	06:58 07:18-07:58/40 18:43	06:33 07:18-07:25/7 16:56	07:09 16:32
3	05:31 20:39	05:56 20:18	06:28 07:12-07:51/39 19:33	06:59 07:19-07:57/38 18:41	06:34 07:16-07:25/9 16:54	07:10 16:31
4	05:31 20:39	05:57 20:17	06:29 07:10-07:53/43 19:31	07:00 07:20-07:56/36 18:39	06:36 07:16-07:25/9 16:53	07:11 16:31
5	05:32 20:39	05:58 20:15	06:30 07:08-07:54/46 19:29	07:01 07:21-07:55/34 18:38	06:37 07:14-07:25/11 16:52	07:12 16:31
6	05:33 20:39	05:59 20:14	06:31 07:06-07:56/50 19:28	07:02 07:23-07:54/31 18:36	06:38 07:13-07:24/11 16:51	07:13 16:31
7	05:33 20:38	06:00 20:13	06:32 07:04-07:57/53 19:26	07:03 07:24-07:53/29 18:34	06:39 07:12-07:25/13 16:50	07:14 16:31
8	05:34 20:38	06:01 20:12	06:33 07:02-07:58/56 19:24	07:04 07:25-07:52/27 18:33	06:41 07:11-07:24/13 16:49	07:15 16:31
9	05:34 20:38	06:02 20:10	06:34 07:00-07:59/59 19:23	07:05 07:26-07:50/24 18:31	06:42 07:10-07:24/14 16:48	07:15 16:31
10	05:35 20:37	06:03 20:09	06:35 06:59-08:00/61 19:21	07:07 07:27-07:49/22 18:29	06:43 07:09-07:24/15 16:46	07:16 16:31
11	05:36 20:37	06:04 20:08	06:36 06:58-08:00/62 19:19	07:08 07:28-07:47/19 18:28	06:44 07:08-07:23/15 16:45	07:17 16:31
12	05:37 20:36	06:05 20:06	06:37 06:58-08:01/63 19:17	07:09 07:29-07:45/16 18:26	06:45 07:08-07:23/15 16:44	07:18 16:31
13	05:37 20:36	06:06 20:05	06:38 06:59-08:02/63 19:16	07:10 07:30-07:43/13 18:25	06:47 07:09-07:22/13 16:43	07:19 16:31
14	05:38 20:35	06:07 20:04	06:39 07:00-08:02/62 19:14	07:11 07:32-07:42/10 18:23	06:48 07:11-07:22/11 16:43	07:20 16:31
15	05:39 20:35	06:08 20:02	06:40 07:01-08:02/61 19:12	07:12 07:33-07:39/6 18:21	06:49 07:12-07:21/9 16:42	07:20 16:31
16	05:40 20:34	06:09 20:01	06:41 07:02-08:03/61 19:10	07:13 07:34-07:36/2 18:20	06:50 07:13-07:20/7 16:41	07:21 16:31
17	05:41 20:33	06:11 19:59	06:42 07:03-08:03/60 19:09	07:14 18:18	06:51 07:15-07:20/5 16:40	07:22 16:32
18	05:41 20:33	06:12 19:58	06:43 07:04-08:03/59 19:07	07:15 18:17	06:53 07:16-07:19/3 16:39	07:22 16:32
19	05:42 20:32	06:13 19:56	06:44 07:05-08:03/58 19:05	07:17 18:15	06:54 07:17-07:18/1 16:38	07:23 16:32
20	05:43 20:31	06:14 19:55	06:45 07:06-08:03/57 19:04	07:18 18:14	06:55 16:38	07:24 16:33
21	05:44 20:30	06:15 19:53	06:46 07:07-08:03/56 19:02	07:19 18:12	06:56 16:37	07:24 16:33
22	05:45 20:30	06:16 19:52	06:47 07:08-08:03/55 19:00	07:20 18:11	06:57 16:36	07:25 16:34
23	05:46 20:29	06:17 19:50	06:48 07:09-08:03/54 18:58	07:21 18:09	06:59 16:36	07:25 16:34
24	05:47 20:28	06:18 19:49	06:49 07:10-08:02/52 18:57	07:22 18:08	07:00 16:35	07:26 16:35
25	05:48 20:27	06:19 19:47	06:51 07:11-08:02/51 18:55	06:24 17:06	07:01 16:34	07:26 16:35
26	05:48 20:26	06:20 19:46	06:52 07:12-08:02/50 18:53	06:25 17:05	07:02 16:34	07:27 16:36
27	05:49 20:25	06:21 19:44	06:53 07:13-08:01/48 18:51	06:26 17:04	07:03 16:33	07:27 16:37
28	05:50 20:24	06:22 19:43	06:54 07:14-08:01/47 18:50	06:27 17:02	07:04 16:33	07:27 16:37
29	05:51 20:23	06:23 19:41	06:55 07:15-08:00/45 18:48	06:28 07:23-07:25/2 17:01	07:05 16:33	07:27 16:38
30	05:52 20:22	06:24 19:39	06:56 07:16-07:59/43 18:46	06:30 07:22-07:25/3 17:00	07:06 16:32	07:28 16:39
31	05:53 20:21	06:25 19:38	07:23-07:41/18	06:31 07:21-07:25/4 16:58		07:28 16:40
Potential sun hours	461	429	375	345	296	286
Sum of minutes with flicker	0	18	1573	397	187	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

Project:

Monacilioni

SHADOW - Calendar per WTG

WTG: WTG4 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (2)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:28 16:41	07:14 17:16	06:38 17:50	06:46 19:25	05:59 19:58	05:30 20:28	05:30 20:40	05:54 20:20	06:26 19:36	06:57 18:45	06:32 16:57	06:54-07:01/7 16:32
2	07:28 16:42	07:13 17:17	06:36 17:52	06:44 19:27	05:58 19:59	05:29 20:29	05:30 20:39	05:55 20:19	06:27 19:34	06:58 18:43	06:33 16:56	06:55-07:00/5 16:32
3	07:28 16:42	07:12 17:18	06:34 17:53	06:42 19:28	05:56 20:00	05:29 20:30	05:31 20:39	05:56 20:18	06:28 19:33	06:59 18:41	06:34 16:54	06:56-07:00/4 16:31
4	07:28 16:43	07:11 17:19	06:33 17:54	06:41 19:29	05:55 20:01	05:28 20:31	05:31 20:39	05:57 20:17	06:29 19:31	07:00 18:39	06:36 16:53	06:58-07:01/3 16:31
5	07:28 16:44	07:10 17:21	06:31 17:55	06:39 19:30	05:54 20:03	05:28 20:31	05:32 20:39	05:58 20:15	06:30 19:29	07:01 18:38	06:37 16:52	06:59-07:01/2 16:31
6	07:28 16:45	07:09 17:22	07:29-07:31/2 17:56	06:30 19:31	06:37 20:04	05:53 20:32	05:33 20:39	05:59 20:14	06:31 19:28	07:02 18:36	06:38 16:51	07:13 16:31
7	07:28 16:46	07:08 17:23	07:28-07:31/3 17:58	06:28 19:32	06:36 20:05	05:51 20:33	05:33 20:38	06:00 20:13	06:32 19:26	07:03 18:34	06:39 16:50	07:14 16:31
8	07:28 16:47	07:07 17:24	07:27-07:31/4 17:59	06:26 19:33	06:34 20:06	05:50 20:33	05:34 20:38	06:01 20:12	06:33 19:24	07:04 18:33	06:41 16:49	07:15 16:31
9	07:28 16:48	07:06 17:26	07:25-07:31/6 18:00	06:25 19:34	06:32 20:07	05:49 20:34	05:34 20:38	06:02 20:10	06:34 19:23	07:05 18:31	06:42 16:48	07:16 16:31
10	07:28 16:49	07:04 17:27	07:24-07:31/7 18:01	06:23 19:35	06:31 20:08	05:48 20:34	05:35 20:37	06:03 20:09	06:35 19:21	07:07 18:29	06:43 16:46	07:16 16:31
11	07:28 16:50	07:03 17:28	07:23-07:31/8 18:02	06:21 19:36	06:29 20:09	05:47 20:35	05:36 20:37	06:04 20:08	06:36 19:19	07:08 18:28	06:44 16:45	07:17 16:31
12	07:27 16:51	07:02 17:30	07:22-07:31/9 18:03	06:20 19:38	06:28 20:10	05:46 20:36	05:37 20:36	06:05 20:06	06:37 19:17	07:09 18:26	06:45 16:44	07:18 16:31
13	07:27 16:52	07:01 17:31	07:20-07:30/10 18:04	06:18 19:39	06:26 20:11	05:45 20:36	05:37 20:36	06:06 20:05	06:38 19:16	07:10 18:25	06:47 16:44	07:19 16:31
14	07:27 16:54	06:59 17:32	07:19-07:30/11 18:06	06:16 19:40	06:24 20:12	05:44 20:37	05:38 20:35	06:07 20:04	06:39 19:14	07:11 18:23	07:32-07:35/3 16:43	07:20 16:31
15	07:26 16:55	06:58 17:33	07:18-07:30/12 18:07	06:15 19:41	06:23 20:13	05:42 20:37	05:39 20:35	06:08 20:02	06:40 19:12	07:12 18:21	07:33-07:38/5 16:42	07:20 16:31
16	07:26 16:56	06:57 17:35	07:16-07:29/13 18:08	06:13 19:42	06:21 20:14	05:41 20:37	05:40 20:34	06:09 20:01	06:41 19:10	07:13 18:20	07:34-07:43/9 16:41	07:21 16:31
17	07:25 16:57	06:55 17:36	07:15-07:28/13 18:09	06:11 19:43	06:20 20:15	05:41 20:38	05:41 20:33	06:11 19:59	06:42 19:09	07:14 18:18	07:35-07:47/12 16:40	07:22 16:32
18	07:25 16:58	06:54 17:37	07:13-07:27/14 18:10	06:10 19:44	06:18 20:16	05:40 20:38	05:41 20:33	06:12 19:58	06:43 19:07	07:16 18:17	07:36-07:49/13 16:39	07:22 16:32
19	07:24 16:59	06:52 17:38	07:12-07:26/14 18:11	06:08 19:45	06:16 20:17	05:39 20:38	05:42 20:32	06:13 19:56	06:44 19:05	07:17 18:15	07:38-07:52/14 16:38	07:23 16:32
20	07:24 17:01	06:51 17:40	07:10-07:24/14 18:12	06:06 19:46	06:15 20:18	05:38 20:39	05:43 20:31	06:14 19:55	06:45 19:04	07:18 18:14	07:39-07:53/14 16:38	07:24 16:33
21	07:23 17:02	06:50 17:41	07:09-07:23/14 18:13	06:05 19:47	06:13 20:19	05:37 20:39	05:44 20:30	06:15 19:53	06:46 19:02	07:19 18:12	07:40-07:55/15 16:37	07:24 16:33
22	07:23 17:03	06:48 17:42	07:08-07:22/14 18:14	06:03 19:48	06:12 20:20	05:36 20:39	05:45 20:30	06:16 19:52	06:47 19:00	07:20 18:11	07:41-07:55/14 16:36	07:25 16:34
23	07:22 17:04	06:47 17:43	07:06-07:20/14 18:16	06:01 19:50	06:10 20:21	05:35 20:39	05:46 20:29	06:17 19:50	06:48 18:58	07:21 18:09	07:42-07:56/14 16:36	07:25 16:34
24	07:21 17:05	06:45 17:44	07:05-07:18/13 18:17	05:59 19:51	06:09 20:22	05:35 20:39	05:47 20:28	06:18 19:49	06:50 18:57	07:22 18:08	07:44-07:58/14 16:35	07:26 16:35
25	07:20 17:07	06:44 17:46	07:03-07:14/11 18:18	05:58 19:52	06:07 20:23	05:34 20:40	05:48 20:27	06:19 19:47	06:51 18:55	06:24 17:06	06:45-06:58/13 16:34	07:01 16:35
26	07:20 17:08	06:42 17:47	07:01-07:08/7 18:19	05:56 19:53	06:06 20:23	05:33 20:40	05:48 20:26	06:20 19:46	06:52 18:53	06:25 17:05	06:46-06:58/12 16:34	07:02 16:36
27	07:19 17:09	06:41 17:48	07:00-07:04/4 18:20	05:54 19:54	06:05 20:24	05:32 20:40	05:49 20:25	06:21 19:44	06:53 18:51	06:26 17:04	06:47-06:59/12 16:33	07:03 16:37
28	07:18 17:10	06:39 17:49	05:53 18:21	06:03 19:55	05:32 20:25	05:29 20:40	05:50 20:24	06:22 19:43	06:54 18:50	06:27 17:02	06:49-07:00/11 16:33	07:04 16:37
29	07:17 17:12	06:37 17:47	05:51 18:19	06:02 19:56	05:31 20:26	05:29 20:40	05:51 20:23	06:23 19:41	06:55 18:48	06:28 17:01	06:50-07:00/10 16:33	07:05 16:38
30	07:16 17:13	06:36 17:46	05:50 18:18	06:01 19:55	05:31 20:27	05:29 20:40	05:52 20:22	06:24 19:39	06:56 18:46	06:30 17:00	06:51-07:00/9 16:32	07:07 16:39
31	07:15 17:14	06:35 17:45	05:49 18:17	06:00 19:54	05:31 20:28	05:29 20:40	05:53 20:21	06:25 19:38	06:55 18:45	06:31 16:58	06:53-07:01/8 16:32	07:08 16:40
Potential sun hours	296	296	369	399	450	454	461	429	375	345	296	286
Sum of minutes with flicker	0	217	0	0	0	0	0	0	0	202	21	0

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG5 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

	January		February		March		April		May		June	
1	07:28	14:42-15:13/31	07:14	14:48-15:07/19	06:38	07:02-07:44/42	06:46	07:04-07:36/32	05:59		05:29	05:51-05:55/4
	16:41	15:31-15:57/26	17:15		17:50		19:25		19:58			20:29
2	07:28	14:42-15:13/31	07:13	14:49-15:07/18	06:36	07:02-07:43/41	06:44	07:03-07:36/33	05:58		05:29	05:51-05:56/5
	16:41	15:31-15:57/26	17:17		17:52		19:27		19:59			20:29
3	07:28	14:42-15:13/31	07:12	14:48-15:05/17	06:34	07:03-07:43/40	06:42	07:01-07:35/34	05:56		05:29	05:50-05:55/5
	16:42	15:32-15:58/26	17:18		17:53		19:28		20:00			20:30
4	07:28	14:42-15:14/32	07:11	14:49-15:05/16	06:33	07:03-07:41/38	06:41	06:59-07:34/35	05:55		05:28	05:50-05:56/6
	16:43	15:33-15:58/25	17:19		17:54		19:29		20:02			20:31
5	07:28	14:42-15:14/32	07:10	14:50-15:04/14	06:31	07:03-07:40/37	06:39	06:59-07:33/34	05:54		05:28	05:50-05:56/6
	16:44	15:33-15:58/25	17:21		17:55		19:30		20:03			20:31
6	07:28	14:42-15:14/32	07:09	14:51-15:04/13	06:30	07:05-07:39/34	06:37	06:59-07:31/32	05:53		05:27	05:50-05:57/7
	16:45	15:34-15:59/25	17:22		17:56		19:31		20:04			20:32
7	07:28	14:43-15:14/31	07:08	14:52-15:03/11	06:28	07:06-07:37/31	06:36	07:00-07:29/29	05:51		05:27	05:49-05:56/7
	16:46	15:35-15:59/24	17:23		17:57		19:32		20:05			20:33
8	07:28	14:42-15:14/32	07:07	14:54-15:02/8	06:26	07:07-07:35/28	06:34	07:02-07:28/26	05:50		05:27	05:49-05:56/7
	16:47	15:35-15:59/24	17:24		17:59		19:33		20:06			20:33
9	07:28	14:42-15:14/32	07:06	14:54-15:01/7	06:25	07:09-07:33/24	06:32	07:03-07:25/22	05:49		05:27	05:49-05:57/8
	16:48	15:36-15:59/23	17:26		18:00		19:34		20:07			20:34
10	07:28	14:43-15:14/31	07:04	07:24-07:28/4	06:23	07:11-07:29/18	06:31	07:07-07:22/15	05:48		05:26	05:49-05:57/8
	16:49	15:37-15:59/22	17:27	14:56-15:00/4	18:01		19:35		20:08			20:35
11	07:28	14:43-15:14/31	07:03	07:23-07:33/10	06:21	07:16-07:24/8	06:29	07:13-07:15/2	05:47		05:26	05:49-05:57/8
	16:50	15:38-16:00/22	17:28	14:58-15:00/2	18:02		19:36		20:09			20:35
12	07:27	14:42-15:14/32	07:02	07:22-07:36/14	06:20		06:28		05:46		05:26	05:49-05:57/8
	16:51	15:38-15:59/21	17:30		18:03		19:38		20:10			20:36
13	07:27	14:43-15:14/31	07:01	07:20-07:37/17	06:18		06:26		05:45		05:26	05:48-05:56/8
	16:52	15:40-15:59/19	17:31		18:04		19:39		20:11			20:36
14	07:27	14:42-15:13/31	06:59	07:19-07:39/20	06:16		06:24		05:43		05:26	05:48-05:57/9
	16:54	15:40-15:58/18	17:32		18:06		19:40		20:12			20:37
15	07:26	14:43-15:14/31	06:58	07:18-07:41/23	06:15		06:23		05:42		05:26	05:48-05:57/9
	16:55	15:42-15:58/16	17:33		18:07		19:41		20:13			20:37
16	07:26	14:43-15:13/30	06:57	07:16-07:41/25	06:13		06:21		05:41		05:26	05:49-05:58/9
	16:56	15:43-15:57/14	17:35		18:08		19:42		20:14			20:37
17	07:25	14:43-15:13/30	06:55	07:15-07:43/28	06:11	06:30-06:32/2	06:20		05:40		05:26	05:49-05:58/9
	16:57	15:46-15:56/10	17:36		18:09		19:43		20:15			20:38
18	07:25	14:43-15:13/30	06:54	07:13-07:43/30	06:10	06:28-06:34/6	06:18		05:40		05:26	05:49-05:58/9
	16:58	15:49-15:52/3	17:37		18:10		19:44		20:16			20:38
19	07:24	14:44-15:13/29	06:52	07:12-07:44/32	06:08	06:27-06:36/9	06:16		05:39		05:26	05:49-05:58/9
	16:59		17:38		18:11		19:45		20:17			20:38
20	07:24	14:43-15:12/29	06:51	07:11-07:45/34	06:06	06:25-06:37/12	06:15		05:38		05:26	05:49-05:58/9
	17:01		17:40		18:12		19:46		20:18			20:39
21	07:23	14:43-15:12/29	06:50	07:09-07:45/36	06:05	06:23-06:38/15	06:13		05:37		05:26	05:49-05:58/9
	17:02		17:41		18:13		19:47		20:19			20:39
22	07:23	14:44-15:12/28	06:48	07:08-07:46/38	06:03	06:22-06:39/17	06:12		05:36		05:27	05:49-05:58/9
	17:03		17:42		18:14		19:48		20:20			20:39
23	07:22	14:44-15:11/27	06:47	07:06-07:45/39	06:01	06:20-06:39/19	06:10		05:35		05:27	05:50-05:59/9
	17:04		17:43		18:16		19:50		20:21			20:39
24	07:21	14:44-15:11/27	06:45	07:05-07:46/41	05:59	06:18-06:39/21	06:09		05:34		05:27	05:50-05:59/9
	17:05		17:44		18:17		19:51		20:22			20:39
25	07:20	14:44-15:10/26	06:44	07:03-07:45/42	05:58	06:16-06:39/23	06:07		05:34		05:27	05:50-05:59/9
	17:07		17:46		18:18		19:52		20:23			20:40
26	07:20	14:44-15:10/26	06:42	07:01-07:45/44	05:56	06:15-06:40/25	06:06		05:33		05:28	05:51-06:00/9
	17:08		17:47		18:19		19:53		20:24			20:40
27	07:19	14:45-15:09/24	06:41	07:01-07:45/44	05:54	06:13-06:39/26	06:05		05:32	05:54-05:55/1	05:28	05:51-06:00/9
	17:09		17:48		18:20		19:54		20:24			20:40
28	07:18	14:46-15:10/24	06:39	07:01-07:44/43	05:53	06:11-06:39/28	06:03		05:32	05:53-05:55/2	05:28	05:51-06:00/9
	17:10		17:49		18:21		19:55		20:25			20:40
29	07:17	14:46-15:09/23			06:51	07:10-07:39/29	06:02		05:31	05:53-05:55/2	05:29	05:52-06:01/9
	17:12				19:22		19:56		20:26			20:40
30	07:16	14:47-15:08/21			06:49	07:08-07:38/30	06:00		05:30	05:52-05:55/3	05:29	05:52-06:00/8
	17:13				19:23		19:57		20:27			20:40
31	07:15	14:47-15:08/21			06:47	07:06-07:37/31			05:30	05:52-05:56/4		
	17:14				19:24				20:28			
Potential sun hours	296		296		369		400		450		454	
Sum of minutes with flicker	1264		693		634		294		12		239	

Table layout: For each day in each month the following matrix apply

Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG

WTG: WTG5 - VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [CAMPOBASSO]

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4,21	4,83	5,24	6,37	6,76	8,17	9,01	9,23	7,23	4,84	4,00	3,35

Operational time

N	NNE	ENE	E	ESE	SSE	S	SSW	WSW	W	WNW	NNW	Sum
1.655	499	195	149	183	260	364	690	1.142	799	427	1.435	7.799

Idle start wind speed: Cut in wind speed from power curve

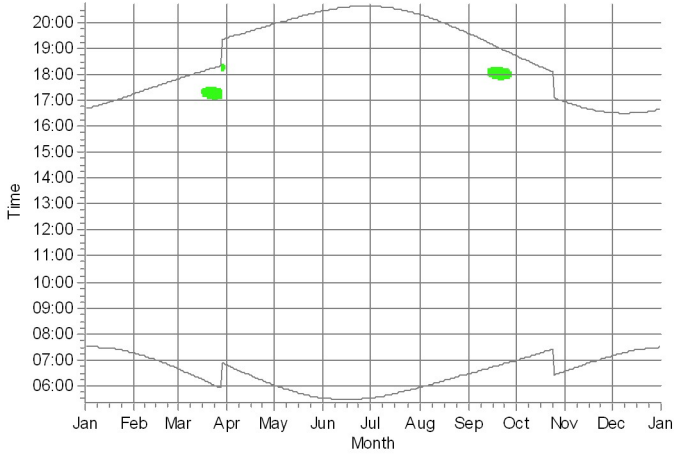
	July	August	September	October	November	December
1	05:30 05:53-06:01/8 20:40	05:54 20:20	06:26 07:11-07:14/3 19:36	06:57 18:45	06:32 06:54-06:56/2 16:57 14:25-14:30/5	07:08 14:25-14:56/31 16:32 15:20-15:42/22
2	05:30 05:53-06:01/8 20:39	05:55 20:19	06:27 07:05-07:20/15 19:34	06:58 18:43	06:33 14:24-14:31/7 16:56	07:09 14:26-14:57/31 16:31 15:20-15:42/22
3	05:31 05:54-06:02/8 20:39	05:56 20:18	06:28 07:01-07:23/22 19:33	06:59 07:51-08:05/14 18:41	06:34 14:22-14:31/9 16:54	07:10 14:26-14:58/32 16:31 15:20-15:43/23
4	05:31 05:54-06:01/7 20:39	05:57 20:17	06:29 06:59-07:25/26 19:31	07:00 07:47-08:08/21 18:39	06:36 14:22-14:33/11 16:53	07:11 14:27-14:59/32 16:31 15:20-15:44/24
5	05:32 05:55-06:02/7 20:39	05:58 20:15	06:30 06:57-07:26/29 19:29	07:01 07:45-08:11/26 18:38	06:37 14:21-14:33/12 16:52	07:12 14:28-14:59/31 16:31 15:20-15:44/24
6	05:32 05:55-06:02/7 20:39	05:59 20:14	06:31 06:55-07:27/32 19:28	07:02 07:43-08:13/30 18:36	06:38 14:20-14:34/14 16:51	07:13 14:29-15:00/31 16:31 15:20-15:45/25
7	05:33 05:56-06:02/6 20:38	06:00 20:13	06:32 06:54-07:28/34 19:26	07:03 07:41-08:14/33 18:34	06:39 14:20-14:36/16 16:50	07:14 14:29-15:01/32 16:31 15:20-15:46/26
8	05:34 05:57-06:03/6 20:38	06:01 20:12	06:33 06:54-07:29/35 19:24	07:04 07:40-08:15/35 18:33	06:41 14:19-14:36/17 16:49	07:15 14:30-15:02/32 16:31 15:21-15:46/25
9	05:34 05:57-06:03/6 20:38	06:02 20:10	06:34 06:55-07:29/34 19:23	07:05 07:38-08:15/37 18:31	06:42 14:18-14:37/19 16:48	07:16 14:31-15:02/31 16:30 15:21-15:47/26
10	05:35 05:58-06:03/5 20:37	06:03 20:09	06:35 06:56-07:29/33 19:21	07:07 07:37-08:16/39 18:29	06:43 14:19-14:38/19 16:46	07:16 14:31-15:02/31 16:30 15:21-15:46/25
11	05:36 05:59-06:04/5 20:37	06:04 20:08	06:36 06:57-07:30/33 19:19	07:08 07:36-08:16/40 18:28	06:44 14:18-14:39/21 16:45	07:17 14:32-15:03/31 16:31 15:21-15:47/26
12	05:37 06:00-06:04/4 20:36	06:05 20:06	06:37 06:58-07:30/32 19:17	07:09 07:35-08:16/41 18:26	06:45 14:18-14:39/21 16:44	07:18 14:33-15:04/31 16:31 15:22-15:48/26
13	05:37 06:00-06:03/3 20:36	06:06 20:05	06:38 06:59-07:30/31 19:16	07:10 07:35-08:17/42 18:25	06:47 14:18-14:41/23 16:43	07:19 14:33-15:05/32 16:31 15:22-15:48/26
14	05:38 06:01-06:04/3 20:35	06:07 20:04	06:39 07:00-07:29/29 19:14	07:11 07:34-08:17/43 18:23	06:48 14:18-14:41/23 16:43	07:20 14:34-15:06/32 16:31 15:23-15:49/26
15	05:39 06:02-06:04/2 20:35	06:08 20:02	06:40 07:01-07:29/28 19:12	07:12 07:34-08:17/43 18:21	06:49 14:18-14:42/24 16:42	07:20 14:34-15:06/32 16:31 15:22-15:49/27
16	05:40 06:03-06:04/1 20:34	06:09 20:01	06:41 07:02-07:29/27 19:10	07:13 07:34-08:17/43 18:20	06:50 14:17-14:43/26 16:41	07:21 13:41-13:43/2 15:23-15:50/27 16:31 14:35-15:07/32
17	05:40 20:33	06:10 19:59	06:42 07:03-07:28/25 19:09	07:14 07:35-08:17/42 18:18	06:52 14:18-14:44/26 16:40	07:22 13:39-13:46/7 15:24-15:51/27 16:32 14:36-15:07/31
18	05:41 20:33	06:12 19:58	06:43 07:04-07:27/23 19:07	07:16 07:36-08:16/40 18:17	06:53 14:18-14:45/27 16:39	07:23 13:38-13:47/9 15:24-15:50/26 16:32 14:36-15:07/31
19	05:42 20:32	06:13 19:56	06:44 07:05-07:27/22 19:05	07:17 07:38-08:17/39 18:15	06:54 14:18-14:45/27 16:38	07:23 13:38-13:48/10 15:25-15:51/26 16:32 14:37-15:08/31
20	05:43 20:31	06:14 19:55	06:45 07:06-07:26/20 19:04	07:18 07:39-08:16/37 18:14	06:55 14:19-14:47/28 16:38	07:24 13:39-13:50/11 15:26-15:52/26 16:33 14:38-15:09/31
21	05:44 20:30	06:15 19:53	06:46 07:07-07:24/17 19:02	07:19 07:40-08:15/35 18:12	06:56 14:19-14:48/29 16:37	07:24 13:38-13:50/12 15:26-15:52/26 16:33 14:38-15:09/31
22	05:45 20:30	06:16 19:52	06:47 07:08-07:23/15 19:00	07:20 07:41-08:14/33 18:11	06:58 14:19-14:48/29 16:36	07:25 13:39-13:51/12 15:26-15:52/26 16:34 14:39-15:10/31
23	05:46 20:29	06:17 19:50	06:48 07:09-07:22/13 18:58	07:21 07:42-08:13/31 18:09	06:59 14:20-14:49/29 16:36	07:25 13:39-13:51/12 15:27-15:53/26 16:34 14:39-15:10/31
24	05:47 20:28	06:18 19:49	06:49 07:10-07:20/10 18:57	07:22 07:44-08:13/29 18:08	07:00 14:20-14:50/30 16:35 15:27-15:29/2	07:26 13:40-13:51/11 15:27-15:53/26 16:35 14:39-15:10/31
25	05:47 20:27	06:19 19:47	06:51 07:11-07:18/7 18:55	06:24 06:45-07:12/27 17:06	07:01 14:21-14:51/30 16:34 15:24-15:34/10	07:26 13:42-13:51/9 15:28-15:54/26 16:35 14:40-15:11/31
26	05:48 20:26	06:20 19:46	06:52 07:12-07:16/4 18:53	06:25 06:46-07:11/25 17:05	07:02 14:22-14:52/30 16:34 15:22-15:36/14	07:27 13:43-13:50/7 15:28-15:54/26 16:36 14:40-15:11/31
27	05:49 20:25	06:21 19:44	06:53 18:51	06:26 06:48-07:10/22 17:04	07:03 14:22-14:53/31 16:33 15:21-15:37/16	07:27 13:44-13:49/5 15:28-15:55/27 16:37 14:40-15:11/31
28	05:50 20:24	06:22 19:43	06:54 18:50	06:27 06:49-07:08/19 17:02	07:04 14:22-14:53/31 16:33 15:20-15:38/18	07:27 14:41-15:13/32 16:37 15:29-15:56/27
29	05:51 20:23	06:23 19:41	06:55 18:48	06:28 06:50-07:06/16 17:01	07:05 14:23-14:54/31 16:32 15:20-15:39/19	07:28 14:41-15:13/32 16:38 15:30-15:56/26
30	05:52 20:22	06:24 19:39	06:56 18:46	06:30 06:51-07:04/13 16:59	07:07 14:25-14:56/31 16:32 15:19-15:40/21	07:28 14:41-15:13/32 16:39 15:30-15:56/26
31	05:53 20:21	06:25 19:38		06:31 06:53-07:02/9 16:58 14:27-14:30/3		07:28 14:41-15:13/32 16:40 15:30-15:57/27
Potential sun hours	461	429	375	345	296	286
Sum of minutes with flicker	86	0	599	907	778	1874

Table layout: For each day in each month the following matrix apply

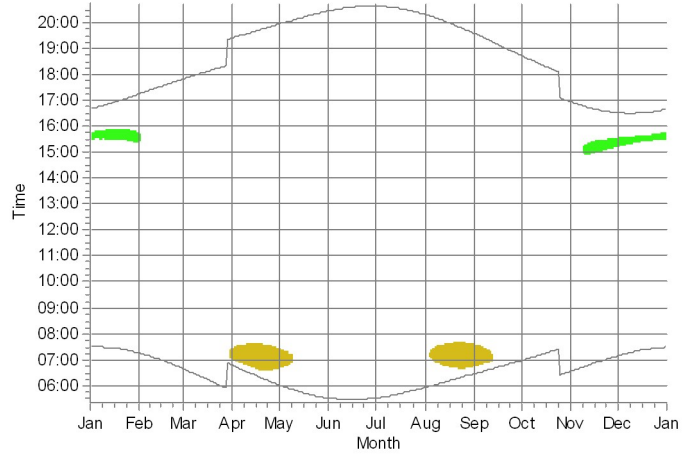
Day in month	Sun rise (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker
	Sun set (hh:mm)	First time (hh:mm) with flicker	Last time (hh:mm) with flicker	Minutes with flicker

SHADOW - Calendar per WTG, graphical

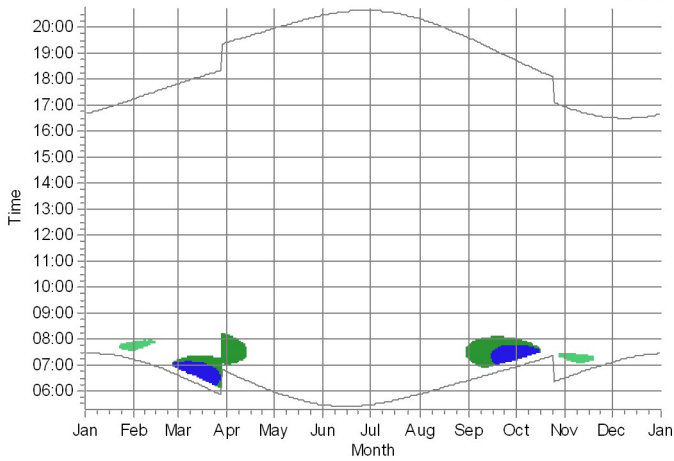
WTG1: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (5)



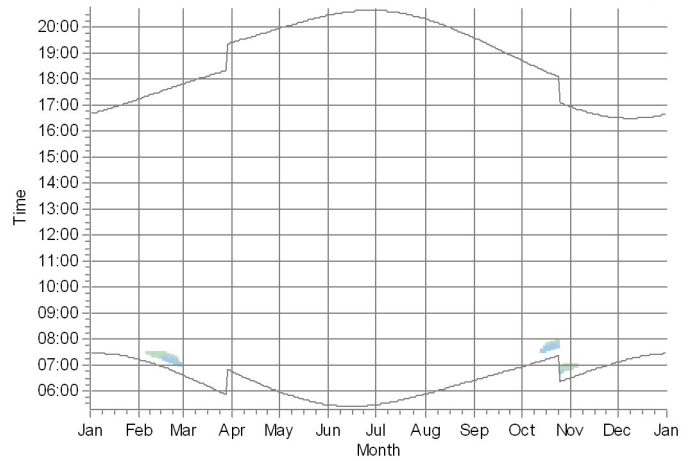
WTG2: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (4)



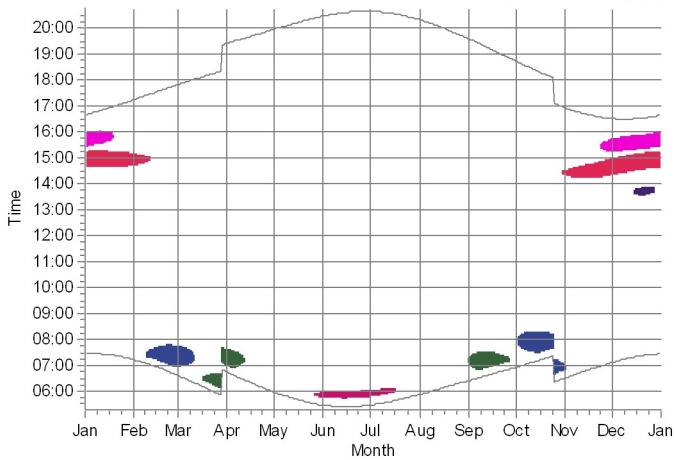
WTG3: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (3)



WTG4: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (2)



WTG5: VESTAS V162-6.2 6200 162.0 !O! hub: 119,0 m (TOT: 200,0 m) (1)



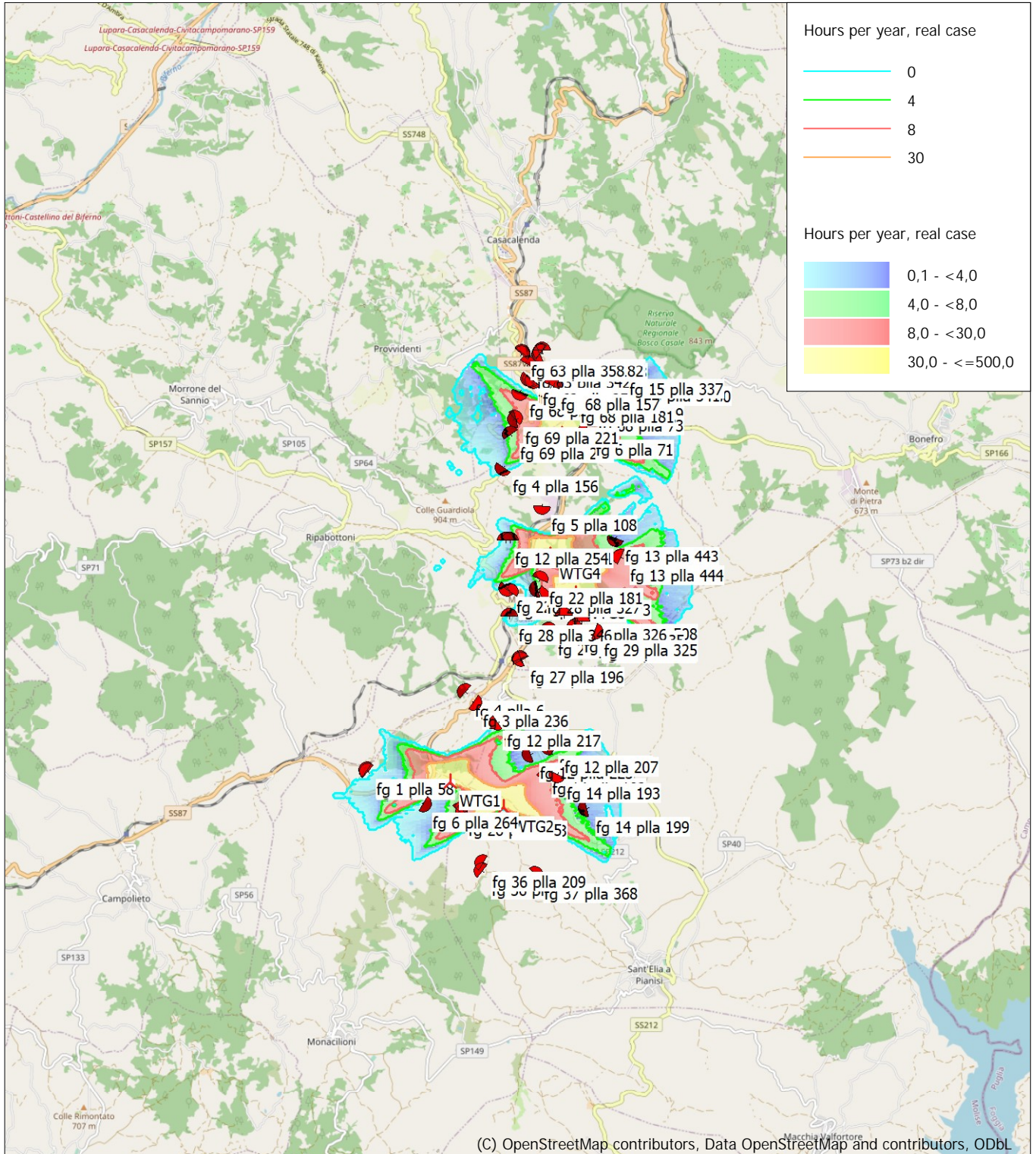
Shadow receptors

- | | | | |
|---|---|---|---|
| fig 12 pila 241: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (28) | fig 22 pila 173: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (40) | fig 4 pila 156: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (25) | fig 69 pila 221: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (74) |
| fig 12 pila 254: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (27) | fig 22 pila 181: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (42) | fig 6 pila 14: Shadow Receptor: 1.0 x 2.0 Azimuth: 0.0° Slope: 90.0° (2) | |
| fig 14 pila 182: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (61) | fig 26 pila 203: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (66) | fig 68 pila 187: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (5) | |
| fig 15 pila 380: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (8) | fig 28 pila 327: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (41) | fig 69 pila 219: Shadow Receptor: 1.0 x 1.0 Azimuth: 0.0° Slope: 90.0° (75) | |

Allegato n. 3

SHADOW MAP

SHADOW - Map



Map: EMD OpenStreetMap , Print scale 1:100.000, Map center UTM (north)-WGS84 Zone: 33 East: 487.320 North: 4.614.540

New WTG

Shadow receptor

Flicker map level: Height Contours: CONTOURLINE_ONLINEDATA_0.wpo (1)

Time step: 4 minutes, Day step: 14 days, Map resolution: 30 m, Visibility resolution: 15 m, Eye height: 1,6 m